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A Modified Jigsaw Learning Activity

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ABSTRACT

This paper describes an active learning exercise that was used in psychology classes. The jigsaw activity required students to be responsible for learning the material and then teaching the other students. Assessment results indicate that a majority of the students found that the activity enabled them to be active learners, over half of the students found the activity to be more interesting than a traditional lecture, and they recommended using it again in the future. Even though a majority of the students did not believe that they had learned the material necessarily better than by listening to a lecture, the jigsaw students were able to maintain the same level of test performance as the control class.

INTRODUCTION

Research indicates that students tend to learn more and better when they are actively involved in the learning process (Davis, 1993). Active learning has been linked to both greater student achievement and positive relationships among students in the class (Langlois, 2001), and to improved teaching evaluation (Hillman, 2010). In fact, educators are strongly encouraged to explore active learning techniques as an alternative to the traditional lecturing format in the classroom (Champions of Active Learning, 2004). One of the much discussed cooperative learning activities, the jigsaw exercise, was initially developed by Aronson and his colleagues (1978) to encourage active and cooperative learning in children and to reduce competition in the classroom. Hedeen (2003) summarized the original jigsaw activity into four procedures. First, students are divided into several small groups. Second, the instructor gives each member of the small group a portion of the material for which she or he is responsible. Each student begins to study and review the material. Third, students in each group with the same material get together and discuss how they plan to teach the content to other members in their respective groups. Last, students return to their groups, where each student teaches the material to the other members as well as learning the material taught by other members of the group. Because each student in a group is responsible for a portion of the content covered in that class, everyone contributes to the completion of the jigsaw puzzle—the topic of the day.

The jigsaw activity has evolved into a learning exercise that teachers on all levels use in their classrooms. A number of college professors have adapted and used modified versions of the jigsaw exercise in their respective classes: An upper level psychology class in which students explored research design (Carroll, 1986); a history class in which students learned about different viewpoints on the United States Constitution (Ciardiello, 1993); a geology class on mineral identification (Constantoupoulos, 1994); an engineering class in which students learned about infrastructure model development (Young, Hadgraft, & Young, 1997); a biology lab class on classifying plants (Colosi & Zales, 1998); an environmental science class in which the students were asked to engage in critical thinking and debate (Choe & Drennan, 2001); a psychology statistics class in which students were asked to finish a worksheet through (Perkins & Saris, 2001); a graduate-level conflict resolution class in which students discussed case studies (Hedeen, 2003); an introductory psychology class in which students learned about experimental design (Demski & Lipke, 2006), a social psychology class in which students learned about prejudice (King, 2006),), and a developmental psychology class in which students learned about human attachment theories (Zhan, 2005).

The effectiveness of this activity has been measured primarily in two types of areas: students' reported enjoyment level and knowledge outcomes. For the first area of measurement, some studies used numerical results whereas others simply reported their observations and impressions. It seems that, in general, most researchers found positive views on the jigsaw exercise from students. The results on test performance, however, seem inconclusive. The reported test scores vary from lower to higher than the control class.

In this paper, I describe a study that used a modified jigsaw activity in lifespan developmental classes. Both students' views on the activity and their knowledge outcomes were measured.

METHOD

The modified jigsaw activity I used in the past three semesters in developmental psychology class was adapted from Hedeen's (2003) version. One section of developmental psychology classes was randomly selected in each semester. The first class had 35 students, the second class had 40 students, and the third class had 40 students, totaling 115. The topics covered were attachment during infancy and moral development. In each case, the class was divided into several small groups of four or five students, and each member of the small group was required to work on a specific portion of the topic. I gave each member a color-coded sheet of paper on which four or five questions for the specific portion of the topic were typed. Students were given a certain amount of time to learn the material from their textbook. Then each member was asked to teach the rest of the group his or her portion of the topic. After all the groups were finished, students with the same colored paper got together and decided on five most important points on this topic that they would like the rest of the class to remember. Each group then wrote their five points on the board to share with the others. This last procedure was used to offer the class a brief summary of what was covered that day.

This exercise took approximately an hour of the 75-minute class. During that period, students interacted with one another in each group and appeared to be actively involved in the learning process.

Two measures were used to assess the effectiveness of this activity. One was a four-item questionnaire that asked for students' feedback on this exercise. This form was given to the students in the beginning of the following class.

1. This activity allowed me to be an active learner in class.
2. Compared with lecture this activity was more interesting.
3. I understood the information on the subject better this way than by listening to a lecture.
4. The instructor should use this activity again in the future.

The response scale ranged from 1 (strongly disagree) to 5 (strongly agree) with the statement.

The second measure was the test scores on the section of attachment during infancy and on the portion of moral development for respective classes. These tests were given at the regularly scheduled time. All the questions were multiple choice items, and they covered several chapters that had been studied. Each test occurred approximately two weeks after the jigsaw activity.

RESULTS

Results concerning students' views on the activity from all the three semesters are presented in Table 1. A majority of the students agreed or strongly agreed with three out of the four statements. Specifically, 91% confirmed that the jigsaw exercise enabled them to be active learners, which was one of the main goals of using the jigsaw exercise. Sixty-two percent of the students thought that this activity was more interesting than a traditional lecture, and the same percentage of students also recommended that this activity be used again in the future. From these responses, I ascertained that most students enjoyed this activity. However, only 38% agreed or strongly agreed that they understood the material better than by listening to a lecture, indicating that more than half of the class did not believe that they necessarily learned more or better through the jigsaw activity.

The test scores from these past three semesters on the portions of attachment during infancy and the moral development were compared with those of classes that did not participate in the jigsaw activity. Results indicate no significant differences. On average, the jigsaw classes ranged from 44% to 97% correct on the relevant items on the tests as compared to the control classes which ranged from 45% to 95% correct.

Table 1
Average Percentage of Students Agreeing or Strongly Agreeing with the Following Statements from Past Three Semesters*

	Item	Percentage			
		1st	2nd	3rd	Avg
1.	This activity allowed me to be an active learner in class.	90	92	91	91
2.	Compared with lecture, this activity was more interesting.	58	70	57	62
3.	I understood the information better this way than by listening to a lecture.	48	35	30	38
4.	The instructor should use this activity again in the future.	58	70	57	62
N = 115					

DISCUSSION: JIGSAW OR NO JIGSAW?

The current findings indicated that most students viewed the jigsaw learning activity in class positively. A majority of the students believed that the jigsaw activity allowed them to be active learners in class; the activity was more interesting than a lecture; and they recommended that I use this exercise again in the future. This positive attitude toward an active and cooperative learning activity is consistent with some previous findings (Hedeen, 2003; McCann & Kadah-Ammeter, 2010; Perkins & Saris, 2001; Young, Hadgraft, & Young, 1997), but does not support findings from others (Demski & Lipke, 2006; King, 2006; Spence, 2004). From an instructor's perspective, I find it encouraging that the students in my developmental psychology classes welcomed active involvement in the learning process. The findings that most students found the jigsaw activity more interesting than listening to a lecture and that they recommended future use lend support to and validation on my efforts to provide from time to time some alternative teaching methods to lecturing in delivering the course material.

The assessment of students' subjective understanding of the material revealed that 38% believed that they had understood the material better this way as compared with a lecture. Although I would like to see a higher percentage, other researchers have also reported similar findings (Demski & Lipke, 2006). One possible explanation is that students are so used to learning from listening to lectures that they are somewhat conditioned to learn the material through the traditional teaching method. Indeed, Spence (2004) presented some evidence for this possibility. He found that some students expected a three-step learning process: first, the professor teaches students the material; second, students study the material and memorize the information; and third, students answer questions on the test that the professor knows that they can. As a result of this traditional expectation, students may feel somewhat lost when they have to learn the material in an active and cooperative way. In fact, some students reported that they had learned nothing through the active learning activity (Spence, 2004). Similarly, some students in the current study may have also believed that they did not understand the material better because they were not used to this alternative learning method. Another possibility is that the effectiveness of active learning activities may depend on the kind of topics chosen, how much prior knowledge students have of the chosen topics, and other factors. Lectures may work better on certain topics, but not others, and so do active learning exercises.

Comparison between test scores of the classes with jigsaw activity and the no-jigsaw classes showed no significant differences. This particular finding is consistent with results from studies by Perkins and Saris's (2001), Thompson and Chapman's (2004), and Demski and Lipke's (2006),

but not with King's (2006) findings. Perkins and Saris compared post-jigsaw students' performance on specific items in the statistics test with that of pre-jigsaw students and found no significant difference. Similarly, in Thompson and Chapman's study, the general psychology test scores of the class using an active learning exercise were compared with a control class, and no significant difference was found. Demski and Lipke compared quiz results between students with active learning experience and those with instructor's lecture and found no significant difference between the two groups. King (2006), however, found that the jigsaw students scored higher on a quiz than the no-jigsaw students. There are several plausible explanations for the no-difference result on test scores. First, the active learning activity such as jigsaw enables students to engage in both independent and cooperative learning processes. Students learned the material from each other. The test items however, were not necessarily designed to measure the specific learning outcomes associated with the jigsaw puzzle. Therefore, it is likely that the student performance on the test may not have corresponded directly with what they learned through the active learning process. Second, in light of this possibility, it may be viewed as a positive outcome that the jigsaw classes in the current study were able to maintain the same high performance on these items as their counterparts in the no-jigsaw classes.

Overall, I believe that active learning activities such as the jigsaw exercise benefit students in several significant ways. First of all, students are provided with an opportunity to take an active role in their own learning as well as that of their classmates. During the process, students also have a chance to interact with others in a cooperative manner. They ask for help as well as giving help. Second, students are less likely to be bored, as often is the case with lectures, because they are actively engaged in learning the material and teaching others. This activity keeps their attention focused on the learning task during class. Third, students are exposed to an alternative teaching method through the jigsaw activity and may be able to develop different types of study techniques on their own, reducing their reliance on the traditional lectures from the professor. Last, most studies including the current one show no negative outcome associated with this activity in terms of student understanding or knowledge acquisition. Students enjoy being active learners while being able to maintain the same high level of performance as those who learn by listening to lectures.

CONCLUSIONS

The current results add to the growing body of empirical studies demonstrating that teaching methods other than lecturing can be viable and effective alternatives in course content delivery. A majority of students liked the activity which allowed them to be active participants in their learning. Students were also able to maintain the same level of performance on the test scores. I hope these findings will encourage more instructors to experiment with alternative teaching methods that involve engaging students in the learning process.

It has been reported that some faculty are hesitant to engage in active learning because they are concerned about insufficient coverage of the material and student test performance ("Deciding on," 2004). The current finding does not support such fear. I believe if the students are interested in the active learning process, and if they can manage to maintain the same level of objective test performance as their peers in traditional classroom, then I believe the activities are successful. I would like to continue engaging students in active learning processes with a variety of alternative methods of delivering material. Along the way, I hope that the students may develop a more positive overall attitude toward the topics and are more motivated to learn more about the contents.

I plan to address some of the procedural issues in using the jigsaw exercise in the future, while continuing to engage students in active learning process. For example, different topics may be selected with less material assignment to ensure that students have sufficient time to learn and then teach others. A brief summary of the chosen topic will also be presented in the beginning of the next class to highlight the important points covered in the jigsaw activity. Maybe this extra step will help students retain the information more successfully, thus enhancing the effectiveness of the jigsaw activity. I would also like to ask students more detailed feedback, such as identifying what part of the activity enhanced their knowledge acquisition and what part did not contribute to that.

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Effects of Computerized Formative Assessment on Student Learning in Economics

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ABSTRACT

In formative assessments, students are given assignments which are checked for correctness but grades are not attached. Numerous possible advantages for learners from the use of formative assessment are identified in the research literature but conclusions about its effectiveness are still mixed and dependent on the methods. An analysis of a computer based formative assessment used in an introductory Economics course was conducted to test for immediate and medium term effects on summative, i.e. graded evaluations. All observations are from students in two fall 2009 sections. Tests relate to whether or not a student completed the formative assessment; both random effects and fixed effects models were examined. The random effects model was found to be appropriate and allowed for the inclusion of numerous control variables. Completion of the formative assessment was found to have a significant effect on immediate evaluated assessments but not on medium term evaluations. The individual immediate effects were large enough to impact average class performance.

INTRODUCTION

A common theme in efforts to improve student learning, as reflected in What the Best Teachers Do by Ken Bain (2004) is to give students a chance to test their abilities without penalty before being graded. The belief is that good feedback can significantly improve learning processes and outcomes if delivered properly. In formative assessments, students are given assignments which are checked for correctness but grades are not attached. The students receive feedback which identifies problems they may have achieving the learning objectives. This feedback can be as simple as reporting whether responses are correct or more specifically, it could be keyed to the incorrect answers so that the feedback relates directly to the type of error made by the student.

An analysis of a computer based formative assessment used in an introductory Economics course was conducted to test for immediate and medium term effects on summative, i.e. graded evaluations. All observations are from students in two fall 2009 sections. Tests relate to whether or not a student completed the formative assessment; both random effects and fixed effects models were examined. The random effects model was found to be appropriate and allowed for the inclusion of numerous control variables. Completion of the formative assessment was found to have a significant effect on immediate evaluated assessments but not on medium term evaluations. The individual immediate effects were large enough to impact average class performance.

RESEARCH ON FORMATIVE FEEDBACK

Formative feedback is a response to some action by a learner intended to communicate information that will modify thinking and behavior and improve learning. Bloom (1969) argued that formative evaluation could be a means "...to provide feedback and correctives at each stage in the teaching-learning process." (Bloom, 1969, p. 48) He saw it as being more effective if separated from the grading process; to be used primarily as an aid to learning. For the instructor, this feedback can identify weaknesses in the instructional process or materials. Light (1990) compares the use of formative feedback to teaching a person to play the piano. The student progresses through numerous practice sessions with an instructor before any public performance which might be subject to evaluation by others. Yet in many of

our courses, every activity is like the pubic performance. Students only receive evaluative feedback which might or might not be useful for achieving success on the next performance but will certainly be used in assessing success overtime.

Shute (2008) as well as Black and William (1998; 2008) provide comprehensive reviews of research literature on formative feedback. Shute's review reveals, "... many conflicting findings and no consistent pattern of results" (Shute, 2008, p. 153). Black and William (1998) concluded that formative assessment accounted for some success but that the research reports reviewed lacked sufficient detail about methods to allow for wide scale replication. Shute's focus was on task level feedback that provides specific and timely information to a student about a particular response to a problem or task, as is the case with the online practice problem sets which are the subjects of analysis in this paper. Keefe and Eplion (2007) report on their use of an online formative assessment method in an introductory Organizational Behavior course at a primarily commuter campus. Their feedback was provided in two stages: the score was known immediately while the correct answers were not revealed until after the material had been discussed in class. They compared students in classes using feedback to those without finding a statistically significant effect in favor of formative feedback. The study here was conducted at a primarily residential campus, provided immediate feedback for all questions and compares students within a course. It also controls for various individualistic characteristics of the students.

What value is formative feedback to a learner? Shute reviews several cognitive mechanisms discussed in the research literature. The feedback can signal a gap between the current and a desired level of performance, possibly motivating a higher level of effort. It thus reduces the uncertainty about how well the learner is performing the task. It has been shown to reduce the cognitive load of a learner who might otherwise feel overloaded with performance demands. For example this might include viewing a worked out problem rather than having to proceed with uncertainty about the steps that should be followed to complete a task. Formative feedback also can provide information that may be useful for correcting inappropriate strategies, procedural errors or misconceptions (these problems abound in Economics.) It can also help a learner realize that ability and skill can be developed through practice, that effort is critical to increasing skill and that mistakes are part of the learning process. As Bloom (1969) concludes, it can assure the learner that he is mastering the information, thus reinforcing the strategies used by the learner and decreasing anxiety. For those finding that they are not mastering the subject, ungraded feedback might motivate them to put forth the extra effort necessary to be rewarded by higher grades, rather than developing expectations of receiving similar grades throughout a course based on early summative evaluations (Bloom, 1969). It can thus help to shift responsibility explicitly back on the student. Pittman and Barney (2006) note the need to find means for helping students better understand their role as active, engaged participants in the learning process because of a trend away from this and toward teacher responsibility for learning. Bedford and Price (2007) explicitly state that they used compute based formative assessment as a method that might enhance and encourage students to do this.

What forms of formative feedback are most effective? Shute's review finds that feedback is more effective when it provides details of how to improve; it goes beyond mere verification of correctness to elaboration. Feedback is more effective when it focuses on the task rather than the accomplishments of the learner. Praise for example does not appear useful. Computerized feedback interventions are cited as yielding stronger effects than non-computerized (Lipnevich and Smith, 2009; Mason and Bruning, 2001; Shute 2008). Keeping the feedback quick, frequent, impersonal and irrespective of the individual appear to be positive factors in feedback effectiveness. In particular, Mason and Bruning (2001) note that computer based feedback is unbiased, accurate, non-judgmental, adaptable to learner styles and needs and only limited by the ingenuity of the designers. This may in part be because the feedback can be immediate.

ONLINE VERSUS PAPER ASSESSMENTS

Providing students with opportunities to practice before being graded is nothing new in Economics or other disciplines. Introductory texts have long been accompanied by student study guides that often offer chapter summaries, multiple choice questions, and numerical and graphing exercises. Correct answers are usually provided at the end of a section or chapter for students to assess their own work. The availability of online practice problems offers students and instructors several advantages over the printed study guides.

With the online assessment students can receive more detailed feedback about each question or problem. Study guides usually only provide the correct answer without any explanation for why it is correct and other possible responses are not. The online assessment provides instructors with a record of attempts so that she has an indication of how much effort an individual student and a class as a whole is devoting to practices before graded assessments. The online assessments can be selected and modified by the instructor. The mix can better reflect what is happening in the classroom. The instructor can insure that the language is similar to that used in class and in the text. Since the printed study guides are most often written by someone other than the author they may not correlate well with the text or classroom activities. With the student already working at a computer it is easy to have the student link to a website to read an article or gather data. These can easily be updated to the latest news reports, economic bulletins or data sets.

APLIA

Aplia is a web based course management package originally developed by economists to accompany introductory courses in Economics. Aplia offered the instructor the opportunity to give students both practice and graded problem sets. For practice problem sets (PPS) students could get immediate feedback about both the correctness of their answers and written feedback about the correct answer, i.e. correct response and topic contingent types of feedback. The feedback was independent of the answer provided by the student. For the students in the classes analyzed herein, participation in and completion of these practice problem sets was voluntary. Students did not have to attempt them before beginning graded problem sets (GPS). Both types of problem sets included multiple choice questions, problems involving manipulation of diagrams, fill in the blank with drop down choices and matching exercises. Links to URLs could also be included to bring students to readings and data sources on the web on which questions could be based. Aplia provided question banks related to each chapter in the chosen text and an electronic version of the text. Instructors were free to edit and add their own multiple choice type questions to either type of assignment. If an instructor added a question, any feedback would also have to be provided. Questions from different chapters could be combined to create weekly problem sets that did not necessarily correspond to one particular chapter. Once the due date for the graded problem set had passed, students could go back to see how their score and review their responses to each question and the associated feedback. All practice problem sets and graded problem sets remained available for review even after new ones were posted.

The author has been using Aplia since the spring 2007 semester for Principles of Macroeconomics. The results in this paper are based on two sections offered during the fall 2009 semester with a total of 102 students. Twelve weekly pairs of problem sets were posted on Aplia and students had at least four days to complete each. Each graded problem set had 20 questions and was accompanied by a practice problem set of between 10 and 20 questions. The practice problem questions focused on knowledge and analytical skills. They did not include any links to readings, though they could include links to data sets that were also used in the graded problem sets. The practice problem sets offered formative feedback immediately. For the graded problem sets, students could start, stop and go back as often as desired until that time. Immediately after the deadline, the results of the graded problem set would be available. These included not only the score and the correct answer for each problem, but, like the practice problem sets, also descriptive feedback for each question. The two lowest graded problem scores were dropped. The 200 point total was one half of the student's final course grade. The

other half was evenly divided between a midterm exam and the final exam. Since the practice problem sets provide the correct answers, only the student's participation was recorded.

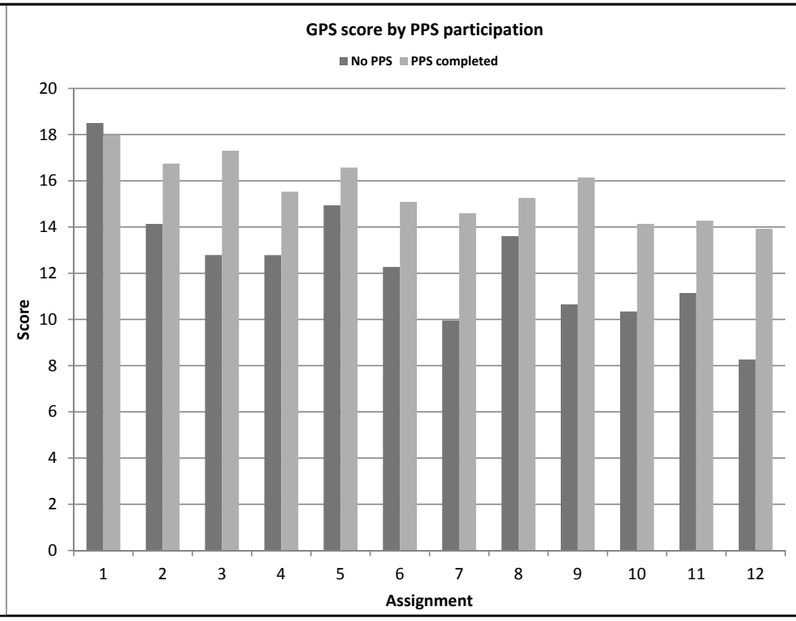
ANALYSIS AND RESULTS

Immediate term effect

For any random student, did working on a PPS influence the score on the corresponding GPS? The answer to this tells us the immediate effect of the formative feedback from the practice problem set on the score for the evaluated assignment.

Figure 1 shows the means scores on the graded problem sets for those who did and did not complete a practice problem set. Except for the first GPS, the means score for those who took advantage of the PPS was always higher than for those who did not. Only two students did not attempt the first PPS. Across all assignments, the average score for when a student participated in a PPS was 15.7/20 while the average when the corresponding PPS was not attempted was only 11.5/20. Thus the evidence suggests that participating in the PPS had a positive impact on the student's score on the GPS. To test this hypothesis the data for PPS and GPS were pooled into one panel for analysis using SAS regression procedures. Since 12 problem sets were assigned and the number of students is 102, the sample size is 1,212 pairs of observations. Additional information available about each student that could be used as control variables included the student's GPA at the end of the semester, the student's class and whether or not the student was a business major. GPA is usually thought of as representing a student's ability in the assessment literature. A higher GPA thus should be positively correlated with the score on the GPS. The student's class, freshman, sophomore, junior or senior can be interpreted as an indication of the student's maturity and level of study skills attained. Business majors, COBE, could be expected to have a higher level of interest in Economics and therefore perform better than non-business majors.

Figure 1
Score on Graded Problem Set by Participation in Practice Problem Set



The results of the analysis are given in Table 1. The adjusted R square value is .3053. Participation in the PPS is significant, as is GPA. Of the other student specific variables the only one that is significant is SR, representing seniors taking the course. The effect is negative; being a senior reduces the score on an individual GPS. The time variables are dummies representing each particular assignment. The score on the GPS was almost always highly dependent on the difficulty of the individual assignment.

These results indicate that a student who completed the practice problem set would likely score 3.2 / 20 points higher on the graded problem set than one who did not. Both the intercept and PPS were highly significant. GPA is significant; as might be expected students with higher GPAs perform better on a graded problem set whether or not they completed the practice problem set.

The significance of both variables given the non-random repetition of GPA scores in this pooled data set was confirmed using a fixed effects model. Both the Hausman test and the Breusch and Pagan test for random effects indicated that running a randoms effect model was appropriate despite the presence of the time invariant variables of GPA, class and major. Running a fixed effects model without these time invariant variable did increase the R square to 0.44 and increased the value of the PPS coefficient to 4.15 and the intercept to 10.99. Since the full results include 100 dummies for individual students, they are not shown. As a further check, a GLM procedure was used for a regression of GPS on PPS, the assignment number and an observation variable for each student. This was run once as a random effects model and a second time as a fixed effects. Comparing the Type I sum of squares for observations to the Corrected total sum of squares for the fixed effects model indicates that 24 percent of the variation in GPS is between students, leaving 76 percent within students. Comparing the mean squared errors for the two models, 3.67 for random, 3.64 for fixed effects indicates that controlling for between person variation does not

Table 1
Effect of Participation in a Practice Problem Set

Parameter Estimates						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	8.55964	0.70988	12.06	<.0001
PPS	PPS	1	3.22223	0.28206	11.42	<.0001
GPA	GPA	1	2.35379	0.19176	12.27	<.0001
COBE	COBE	1	-0.35470	0.27172	-1.31	0.1920
SO	SO	1	-0.27078	0.27656	-0.98	0.3277
JR	JR	1	-0.35901	0.36796	-0.98	0.3294
SR	SR	1	-2.39750	0.69150	-3.47	0.0005
assign2		1	-1.21892	0.54560	-2.23	0.0257
assign3		1	-0.99230	0.54646	-1.82	0.0696
assign4		1	-2.45874	0.54542	-4.51	<.0001
assign5		1	-1.22662	0.54580	-2.25	0.0248
assign6		1	-2.87679	0.54725	-5.26	<.0001
assign7		1	-3.81848	0.54850	-6.96	<.0001
assign8		1	-2.35863	0.54922	-4.29	<.0001
assign9		1	-2.42904	0.54754	-4.44	<.0001
assign10		1	-4.06600	0.54850	-7.41	<.0001
assign11		1	-3.75467	0.54922	-6.84	<.0001
assign12		1	-5.02200	0.55310	-9.08	<.0001

reduce the error sum of squares. Nor therefore does the R squared value improve much, increasing only from .42 to .44. Also, since the mean squared errors do not vary much, we should not expect much difference in the standard error for PPS and indeed this is the case as it is .34 in both cases.

Medium term effects

Did students who completed more practice problem sets earn more points on the graded problem sets? Did the availability of PPS, formative feedback make a difference in performance over the semester at the student level?

The total number of points a student could achieve on the graded problem sets was only 200 as the two lowest grades were dropped for all students. Figure 2 shows the dispersion of totals on graded problem sets by the number of practice problem sets in which a student participated. No obvious upward trend is present however the number of observations for low numbers of practice problem sets tends to be small. To test the hypothesis that participation improves a student's achievement, the GPS total was modeled as dependent upon the number of PPS completed. GPA and the other time invariant variable were included in the analysis. The total score for GPS then was regressed on the number of practice problem sets completed, which could be up to 12.

The R squared value with this model is .46. The intercept and GPA are highly significant. The PPS participation rate is weakly significant, i.e. only at the 10% level of confidence.

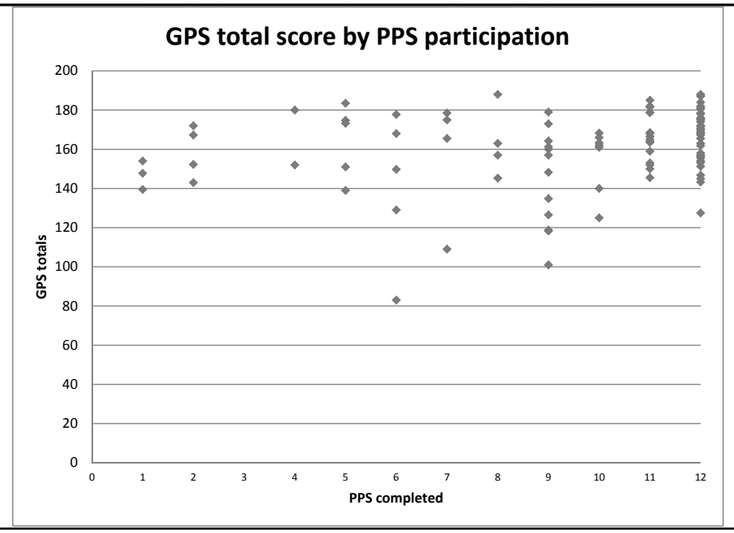
Also as with the individual results, being a sophomore or junior, or being a business major did not prove to be significant, nor did they add much to the R squared value. Being a senior was weakly significant factor however it reduced the scores on the graded problem sets.

Students Completing more Practice

Did students who completed more practice problem sets perform better on the broad and later measures of achievement, the exams and in the course?

Students had the opportunity to complete 6 practice and graded problem sets before the midterm and an additional six before the final exam.

Figure 2
Student Scores on All Graded Problem Sets by Rate of Participation in Practice Problem Sets



This allowed for testing two possible effects. One is the effect of completion rate for the first 6 on the midterm exam. Participation in the first 6 PPS however was not a significant factor in performance on the midterm. The PPS participation rate was not significant though the intercept and GPA were. The R square value was Ø.21.

For the final exam the effect of the participation rate on all 12 possible was analyzed. Some students who did few of the first 6 increased their use of the practice sets after the midterm. However, as with the midterm the participation rate does not have any significant effect on the final exam grade when GPA was included as a control.

The final exam included a set of 9 questions used in common among all instructors' final exams for assessment purposes. The average among all students on these questions is cited in an annual assessment report. If the practice of having practice problem sets is to show any effect on externally reported measures of student achievement it would have to be here. Thus the analysis was repeated for this subset of questions from the final. The score on this subset was regressed on the number of practice problem sets completed, as well as GPA, class year, and whether or not the student is a business major. The results however were not any better, even when including all the possible control variables. The adjusted R-square was only .Ø5. The only significant characteristic was being a senior.

Individual Participation

If individual participation rate in the practice problem sets improves individual performance on the graded problem set would not this also be the case of the entire class for each graded problem set?

Casual observation in the past gave credence to this belief; the class average seemed to rise and fall with the participation rate. Figure 3 seems to corroborate this. A regression of the GPS means on PPS participation rate for each assignment yields the results in Table 2. Participation rate is the fraction of the students who used the PPS for each GPS. The R square is quite high, .81and the mean rate of participation in the PPS is highly significant. This result is significant in that assessment of learning objectives is usually done on a class basis, not an individual basis. If the availability of practice problem sets is improving the performance of the group as well as the performance for individuals who use it, then this formative assessment method will appear very effective.

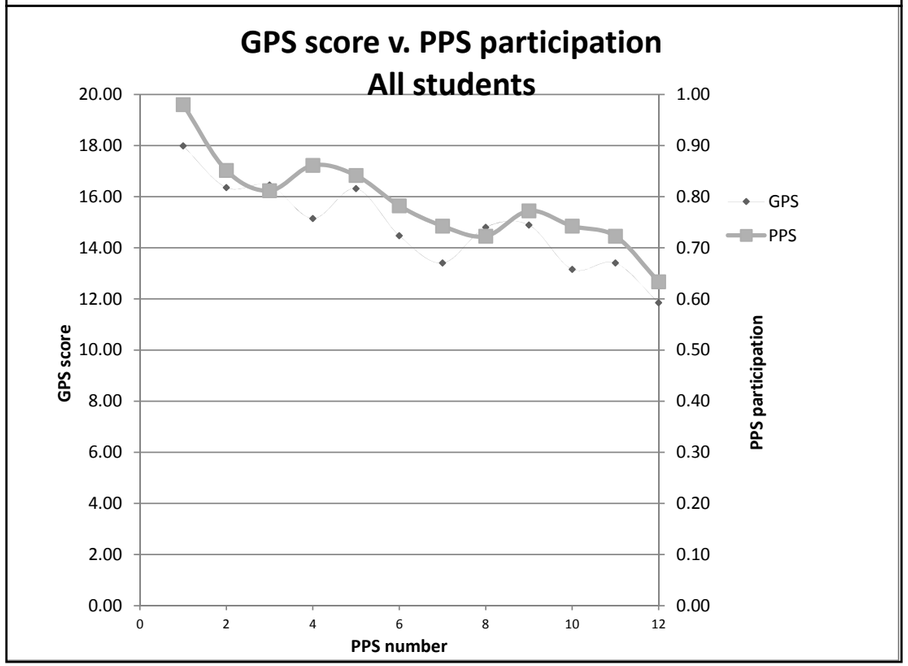
CONCLUSIONS

Students who participated in the opportunity to do a practice problem set and receive formative feedback did better on the corresponding graded problem set. The class average measure of performance for each graded problem set likewise increased the greater the number of students doing the practice problem set. Overall participation in PPS did not improve performance on assess-

Table 2.
Effect of Individual Participation on All Practice Problem Sets.

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	Intercept	1	95.72822	8.20156	11.67	<.0001
PPStotal	PPStotal	1	0.79264	0.48333	1.64	0.1044
GPA	GPA	1	21.07002	2.54123	8.29	<.0001
COBE	COBE	1	-1.47327	3.59183	-0.41	0.6826
SO	SO	1	-1.68012	3.64894	-0.46	0.6463
JR	JR	1	-1.74824	4.83771	-0.36	0.7186
SR	SR	1	-15.31480	9.08936	-1.68	0.0953

Figure 3
Class Average on Each Graded Problem Set by Participation Rate of All Students in Practice Problem Sets



ments further away in time, that is, the midterm and the final exam. Only weakly did it have any effect on the overall performance on all graded problem sets. As the literature in this field has found, the immediate effect can be large but the retention and thus the effect on performance on medium term assessments is less strong. This finding holds for this course even when students had access to all previous practice and graded problem sets as resources for preparing for summative assessments. Some students did take advantage of these when preparing for the exams; however on average they either did not do so or this availability did not help them perform any better.

How we assess achievement of learning objectives may well make a difference in our conclusions about the effectives of learning strategies. Immediate feedback appears to have immediate results, so measures related to immediate assessments will more likely show a positive effect than longer term assessments. In this vein, online immediate formative feedback that provides explanations in addition to correct answers appears to be effective in helping students perform better in the short-rum. Whether their less significant effect in the medium terms found here is a matter of retention or just measurement methods invites further research.

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Teaching Linear and Non-Linear Programming: A Cross-Disciplinary Approach

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ABSTRACT

Many topics in economics overlap with topics in business courses. In fact, economics form the theoretical framework for most business courses. Yet, some business students consider economics unrelated to their discipline. Therefore, students are less enthusiastic about majoring in economics, leading to reduction in economics programs (Siegfried, 2007). Perhaps, integrating economics and business topics would stimulate students' interest. For instance, isoquants, isocosts, PPF are linear or non-linear programming (LP) topics as taught in economics. Feasible regions and level curves are their counterparts as derived in management science or operations management. This paper draws connections between LP as presented in economics and as applied in business courses.

INTRODUCTION

Economics form the theoretical framework for many business courses. Yet, a good proportion of students do not believe taking economics is necessary in understanding business courses. Students also think that economics is not a business course and therefore display little interest for the course, leading to decline in economic programs (Siegfried, 2007). For students to be well rounded in business courses, however, they must have reasonable understanding of economics. Thus, in business schools, economics must be fully integrated with other business courses—it cannot be regarded as a course taken in passing.

Efficiency is generally the tenets of economic theories as applied in business courses such as finance, accounting, and management science or operations management. Economics also serve as the guiding principles for such business courses as marketing, organizational behavior and business laws. If business students cannot recognize and appreciate the importance of economics concepts, it must be the abstract nature of economics presentations and the students' inability to connect (Marburgar, 2004; Gregorowicz & Hgji, 1998). Whether economics is offered in a liberal arts department or in business school (Dean & Dolan 2001), economics courses are widely taught as social sciences such that students who take the same topics in economics and business courses may lack the basic knowledge needed to relate the underlying concepts.

For example, in teaching optimization using linear and non-linear programming in economics, the concept of opportunity cost, which is an important concept in economics, is well emphasized and graphically illustrated with isoquants, isocost, production possibilities frontiers and isoprofit line. The same student enrolled in management science learning linear and non-linear programming is faced with feasible regions and level curves. The student cannot draw connections between these two approaches and may fail to conceptualize the topic in business school.

The ability for the students to link materials learned in economics to other business courses should be encouraged. According to learning motivation literature, the best learners are students who link what they learn in one course to another. These are students who apply mastery

style of learning (Harachiewicz, Baron & Elliot, 1997, 2000; Ames & Archer, 1998.)[1]

This paper illustrates how linear and non-linear programming (LP) presented differently in economics as a social science and management science or operations management in business schools can be linked to give the students deeper understanding of the topic. Section 2 describes LP as taught in economics; section 3 as applied in management science or operations management; section 4 integrates both approaches; and section 5 concludes.

ECONOMICS ANALYSIS

The objective of linear or non-linear programming is to demonstrate the use of optimization in economics. Individuals maximize utility subject to market constraints. Society in general maximizes outputs from limited or scarce resources. Firms maximize profits and revenues and also minimize costs. All economic agents including the firm are faced with constraints.

A basic linear programming (LP) problem in economics is the cost minimization. Along a production function, $Q = f(K, L)$, there is technologically efficient combination of K (capital) and L (labor) that yields the optimal level of output, Q. A given output level could be produced using more K and less L or less K and more L, taking into account prices of the inputs, r and w. The optimal units of K and L are derived from the LP statement, minimize total cost, $TC = rK + wL$ subject to $Q = f(K, L)$. Here, the TC equation is the objective function the LP minimizes given the Q function.

In economics, isoquants, meaning equal quantity and isocosts, equal cost, are used to illustrate the technologically efficient combinations of K and L in the objective and constraint functions. Capital (K) is normally graphed as the production input on the vertical axis and labor (L) on the horizontal axis. The isoquants are generally convex to the origin (since inputs are not perfect substitutes) and the isocosts are linear, intersecting capital (K) axis and labor (L) axis.

Economic results are attained based on incremental or marginal analysis. Moving along the isoquant changes the combinations of K and L and this is dictated by the slope of the isoquant. The slope of the isoquant is the marginal rate of technical substitution of labor for capital ($MRTS_{LK}$), which equals the marginal product of labor (MP_L) divided by the marginal product of capital (MP_K):

$$MRTS_{LK} = (MP_L)/(MP_K). \qquad (2.1)$$

In addition to technological efficiency illustrated by the isoquant, market constraint is illustrated by the isocost. The isocost line reflects all combinations of K and L the firm can employ in production for a given budget. The isocost line is depicted by $TC = wL + rK$, where TC is the total costs, w equals price of labor (wage rate) and r equals cost of capital (interest rate). The absolute value of the slope of the isocost line equals the relative prices of the inputs, K and L, which is w/r. Efficiency (least costly method of production) requires that firms employ the units of capital and labor where the slopes of the isoquant and isocost lines are equal. That is where:

$$MRTS_{LK} = (MP_L)/(MP_K) = w/r. \qquad (2.2)$$

Graphically, at the optimal point, the isoquant is tangent to the isocost. By cross multiplication, the two right-hand terms become:

$$(MP_L)/w = (MP_K)/r \qquad (2.3)$$

The producer's least-cost input combination golden rule is for the manager operating in a competitive input market to employ inputs such that the *marginal product per dollar spent is equal across all inputs applied.* Isolating K in objective function ($TC = rk+wL$),

$$K = TC/r - w/r(L) \qquad (2.4)$$

As the scale of production expands, there will be a family of isocosts and isoquants as indicated by the broken line and curve known as expansion path.

The dual version of cost minimization is revenue or profit maximization. A firm producing two outputs, X and Y, using K and L as inputs would maximize output,

$$Q(X, Y) = f(K_x, L_x, K_y, L_y)$$

subject to

$$TC = [r(K_x + K_y) + w(L_x + L_y)].$$

The profit statement would be

$$\pi = pQ(X,Y) - TC,$$

that is,

$$[p_x Q(X) + p_y Q(Y)] - (rK_x + wL_x + rK_y + wL_y),$$

where

p_x and p_y equal the prices of X and Y, respectively.

The production possibility (PPF) facing an entrepreneur is similar to that of an economy. LP constraint maximization for the firm can be graphically depicted by the PPF—the boundary between output attainable and unattainable using available resources and technology. The PPF is bowed off from the origin due to the increasing opportunity cost. This is illustrated in Figure 2.2

Figure 2.1
Isocost and Isoquant

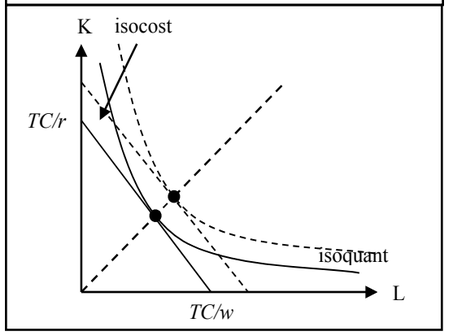
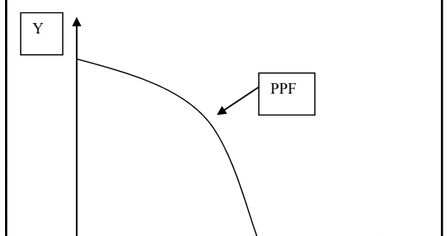


Figure 2.2
Production Possibilities Frontier



The slope of the PPF is the marginal rate of transformation (MRT). As producers in the economy transfers resources from the production of Y (a capital good for example) to the production of X (consumption good), more units of Y would have to be sacrificed. If equal units of resources are exchanged in the production of both goods, the PPF would be linear. It is emphasized that an economy cannot produce outside the PPF, because resources or inputs are fixed. The production possibility frontier is constrained by fixed inputs and technology.

The most common method applied in illustrating optimization using linear or non-linear programming is the use of the Lagrangian technique (See Appendix A for illustration). In economics graduate departments, the student is assumed to have a reasonable background in linear algebra to solve for optimal levels of unknown variables.

BUSINESS ANALYSIS

In business courses, such as management science, quantitative methods or decision analysis, optimization using linear programming is approached differently (Chiang & Wainwright, 2005). Although the model is the same as in economics, the approach is prescriptive and the analysis is more applied. The objective function and constraints containing the decision variables are stated. It could be total profits for maximization or total costs for minimization. As in section 2, I will illustrate both minimization and maximization problems.

1 Students adopt different learning strategies known as achievement goals. These styles of learning are grouped into mastery and performance goals. When pursuing mastery goal, an individual's objective is to develop competence by acquiring new knowledge and skills. These students compare and relate what they learn from one course to another. They are considered deep learners and apply thorough study habits. (Harachiewicz, Baron & Elliot, 1997, 2000; Ames & Archer, 1988). Students who pursue performance goal, on the other hand, are found to be shallow learners. The main objective of performance learners is to outperform other students and earn higher grades. Performance learners are found to score higher in examinations than mastery style learners.

Suppose a dietician in a home for the elderly is faced with the objective of providing her residents with two meals, m_1 and m_2. Each meal should be rich in vitamin C, iron and zinc. The prices of the meals and nutritional contents of vitamin C, iron and zinc per hypothetical unit are provided in table 3.1.

Table 3.1
Prices and Nutrients per Lb for Each Meal

	Meal (m_1)	Meal m_2	
Cost per meal	$0.75	$1.00	Minimum daily needs
Vitamin C (units)	12	5	27
Iron	4	4	16
Zinc	2	8	14

The problem facing the dietician is to determine what combination of the two meals will satisfy the minimum daily needs and at the same time incur the least cost. The linear programming would be:

Minimize

$C = 0.75m_1 + m_2$ (objective function)

Subject to

$12m_1 + 5m_2 >= 27$ (vitamin C constraint)

$4m_1 + 4m_2 >= 16$ (iron constraint)

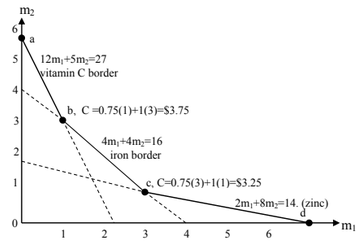
$2m_1 + 8m_2 >= 14$ (zinc constraint)

m_1 and $m_2 > 0$ (positive and whole meal requirement)

Figure 3.1 shows the graphical optimal solutions to the dietician's problem and the exact points derived with simple algebraic manipulations of the LP equations.

There are four extreme points—a, b, c and d. The area to the right of the extreme points is the feasible region. Owing to the positive food requirements for both meals, only points b and c are of importance to the dietician. The optimal solution to this simplified minimization problem is at extreme point c where the dietitian would prepare 3 lb and 1 lb of meals 1 and 2, respectively, and spend $3.25 per day for both meals.

Figure 3.1
The Feasible Region



In a management science course, LP might be a production maximization problem (Mansfield, 1993). Suppose XXX Auto Company can produce sedan and sport cars using four facilities: sedan assembly plant, engine assembly plant, sheet metal stamping plant and sport car assembly plant. Each sedan car that is produced per hour uses 4.5% of the sedan assembly capacity and each sport car utilizes 4% of the sport car assembly plant. Other percentage requirements per hour for engine and sheet metal stamping are presented in Table 3.2.

Table 3.2
Percentage of XXX Auto Company Fixed Capacity Needed per Hour

Plant	Sedan	Sport
Sedan assembly	4.5	0
Sport car assembly	0	4
Engine assembly	2	3.33
Sheet metal stamping	4	2
Contribution margin[2]	$400	$600

Let Q_{SD} and Q_{SP} be units of sedan and sport cars, respectively, produced per hour, and π equals total contribution margin per hour. The maximization problem would be:

Maximize

$\pi = 400Q_{SD} + 600Q_{SP}$

Subject to:

$.045\ Q_{SD} <= 1$ (sedan assembly capacity constraint)

$.04Q_{SP} <= 1$ (sport car assembly capacity constraint)

$.02Q_{SD} + 3.33Q_{SP} <= 1$ (engine assembly capacity constraint)

$.04Q_{SD} + .02Q_{SP} <= 1$ (sheet metal stamping capacity constraint)

Q_{SD} and $Q_{SP} >= 0$ (positive unit requirements)

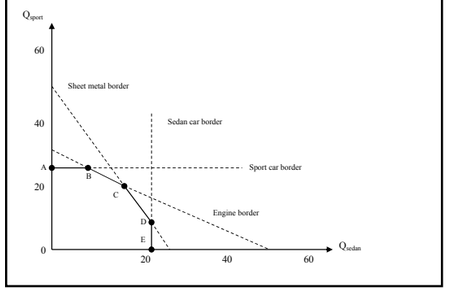
Graphically and algebraically we can find the optimal combined units of sedan and sport cars this company can produce with available resources.

Points ABCDE are the extreme points. The feasible region is defined by 0ABCDE. Maps of isoprofit lines can be drawn to determine sedan and sport car units that generate the largest profits (per hour) for XXX Auto Company. Algebraically, the feasible solutions for the extreme points are presented below on table 3.3. The optimal point set that gives the maximum profit is at C, where XXX Auto Company produces approximately 14 sedan and 22 sports cars per hour, assuming that there are customers who are able and willing to buy these cars.

Linear programming problems with more than two decision variables are cumbersome to solve using graphs and algebra. To avoid mathematical complications that might usurp the students' concentration, many business departments make use of software packages made available by modern technology in teaching linear or nonlinear programming. Excel's Solver is readily available on every computer. In addition to solving for optimal values, Excel's Solver produces Answer, Sensitivity and Limits Reports (Ragsdale, 2001). These reports are important for a manager in the day-to-day allocation of business resources.

The first part of Answer Report provides the final values, which are the optimal solutions to the LP

Figure 3.2
Profit Maximization—XXX Auto Company



(linear programming problem). The last part has formula, status and slack columns. The formula columns have spreadsheet cell keys showing upper or lower bounds (see Table A1 at the end). The status column indicates binding and nonbinding constraints. Slacks are associated with the status column. Slacks are unutilized resources. A binding constraint has zero slack and a nonbinding constraint has positive slack. Thus, nonbinding constraints have unutilized resources.

Businesses are surrounded by uncertainty. Sensitivity analysis provides information on how much the objective function coefficient could change without affecting the optimal solution of the LP. This report contains allowable increase and decrease of the objective and constraint coefficients (see Tables A2 and A3 at the end). If prices change or the costs of production change, profits change as well. The sensitivity Report becomes handy to the manager in times of volatile prices.

Another important information provided by Sensitivity Report in LP output is the "shadow price." The shadow price for a constraint shows

Table 3.3
Optimal Feasible Solutions

Points	Sedan	Sport	Contribution Margins		Total
A	0	25	400	600	$15,000
B	8.37	25	400	600	18,348
C	**14.13**	**21.73**	**400**	**600**	**18,690**
D	22.2	5.6	400	600	12,160
E	22.2	0	400	600	8,880

how much the optimal solution would change with some changes in available resources (the b's in Appendix A). Holding other variables constant, if the shadow price of a constraint is positive, increasing the factor within the allowable increase would increase the optimal solution to the LP's objective function and vice versa. A zero shadow price indicates that the available resources have no further impact on the optimal solution. Thus, the shadow price of a nonbinding constraint is always zero. Shadow price would be useful when the organization is concerned with relevant cost or faced with divisional transfer pricing. Is the shadow price related to the concept of opportunity cost as used in economics?

The Limits Report shows upper and lower limits. That is, it shows the largest and smallest values each variable can take, while the values of all other variables are held constant.

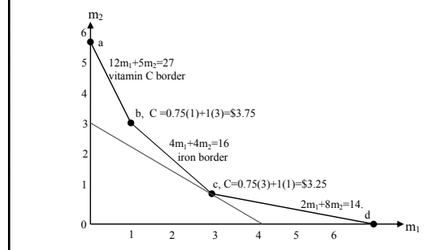
CROSS-DISCIPLINARY APPROACH

The presentation of linear and nonlinear programming in economics is shown in section 2. The way linear programming is taught in courses such as management science, quantitative analysis or operation management in a business department is shown in section 3. If the same group of students is enrolled in both courses, most of them might not adequately relate the two approaches, even though both are linear or nonlinear programming.

Take Figure 3.1 for example, reproduced here as Figure 4.1. The dotted parts of the borderlines depicting the constraints are removed and we have the solid-line parts (points a, b, c and d) showing the feasible region.

The student should understand the equivalent illustrations in sections 2 and 3. First, while in economics, we have a smooth, well-behaved, decreasing, differentiable and convex to the origin isoquant (figure 2.1), the equivalence in management science is a rugged and kinked feasible boundary line constructed by fixed input constraints. Second, the optimal solution in management science is equivalent to the efficient technological inputs combination as illustrated in economics—that is, where the slope of the isocost is tangent to the slope of the isoquant; this is mathematically expressed as in equations (2.2)

FIGURE 4.1
FEASIBLE REGION, ISOQUANT AND ISOCOST



and (2.3)—$(dQ/dL)/(dQ/dK) = w/r$; marginal rate of technical substitution should equal ratio of input prices.

$$MRTS_{LK} = (MP_L)/(MP_K) = w/r.$$

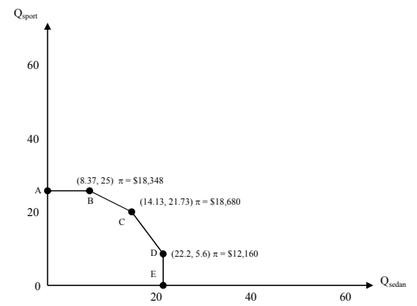
For the dietician, this ratio is Ø.75, the price of meal 1 divided by the price of meal 2. which is also equal to the slope of the objective function, ¾, and the slope of the feasible region at point of tangency in Figure 4.1.

Third, while economics students would mistake the constraints for the isocost, the isocost is different, as can be seen in Figure 4.1. In fact, the LP constraints are determinants of the feasible region (isoquant). Fourth, the properties of the isoquant would be more memorable to the students using the constructs responsible for the shape. For example, two of the properties say, isoquants further from the origin reflect greater output and isoquants do not intersect. This could be explained by the fact that higher feasible regions are constructed by higher and different levels of input constraints.

There are families of isoquants that are either linear for perfect substitutes or L-shaped for perfect complements. The business counterparts and industries that display such input characteristics and generate these types of feasible regions would be of interest for economics and business researchers.

The same argument applies to a firm's PPF and a maximization problem as shown in Figures 2.2 and.3.2. Figure 4.2 reflects the feasible region, area ØABCDE, for the XXX Auto company problem. The dotted parts of Figure 3.2 depict-

FIGURE 4.2
MAXIMIZATION, FEASIBLE REGION/PPF



ing sedan, sport cars, sheet metal and assembly constraints are removed. Instead of a concave, continuous and increasing PPF as illustrated in economics (Figure 2.2), the solid line ABCDE (in figure 3.2) becomes a kinked PPF showing the possible combinations of sedan and sport cars XXX Auto Company can produce with available inputs.

If properly drawn to scale, the slope of the isoprofit line tangent to the optimal feasible set should equal the ratio of the prices of the cars.

At point B, XXX Auto Company can produce approximately 8 sedans and 25 sport cars. At point C, the optimal feasible set, the company can produce approximately 14 sedans and 22 sport cars. At point D, it produces roughly 22 sport cars and 6 sedans. If the company decides to produce at any points other than point C, the opportunity cost of making such decision would be equal to the profits forgone. In this case, it would be $342 at point B and $6,520 at point D (in net values).

CONCLUSION

Minimization problem in linear and non-linear programming using isoquants and isocosts in economics are shown. A maximization problem using production possibility frontier is illustrated. The feasible regions and level curves, which are the business counterparts as derived in management science are also presented. Without proper classroom integration, many students would lack the adequate information needed to link both concepts as presented in different departments. Thus, there is the potential for students to remain apprehensive about the application of such topics even after graduation due to lack of thorough understanding.

Integrating both parts as described in section 4 in teaching business economics would contribute to the students' overall comprehension of the topic. Knowing that the objective and constraint functions in LPs are created from unit revenues and unit costs, respectively, would en-

TABLE A
AS PRODUCED BY EXCEL'S SOLVER

Table A1
Hypothetical Answer Report - Constraints

Cell	Variable	Cell Value	Formula	Status	Slack
$C$7	X1	400	$C$7<=$D$7	Binding	Ø
$C$8	X2	1600	$C$8<=$D$8	Not binding	255

Table A2
Example of Sensitivity Report Columns – Adjustable Cells

Cell	Variable	Final Value	Reduced Cost	Objective Coefficient	Allowable Increase	Allowable Decrease

Table A3
Example of Sensitivity Report Columns – Constraints

Cell	Variable	Final Value	Shadow Price	Constraint R.H. Side	Allowable Increase	Allowable Decrease

able students grasp the concept of opportunity cost as analyzed in economics. Students would be able to recognize efficiency and apply it in business analysis.

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APPENDIX A

The objective function and the constraints are stated. The first and second derivatives are taken, the former are set equal to zero (necessary conditions), and the latter are compared to zero (sufficient conditions).

MAX (or MIN)

$$c_1X_1 + c_2X_2 + \ldots + c_nX_n \qquad A2.1$$

Subject to:

$$a_{11}X_1 + a_{12}X_2 + \ldots a_{1n}X_n <= b_1 \qquad A2.2$$

$$\vdots$$

$$a_{k1}X_1 + a_{k2}X_2 + \ldots a_{kn}X_n <= b_k \qquad A2.3$$

$$\vdots$$

$$a_{m1}X_1 + a_{m2}X_2 + \ldots a_{mn}X_n <= b_m \qquad A2.4$$

and non-negativity requirements,

$X_1, X_2, \ldots,$ and X_n are >= 0.

The Lagrangian becomes:

$$L = \{(c_1X_1 + c_2X_2 + \ldots + c_nX_n) + \lambda_1[b_1 - (a_{11}X_1 + a_{12}X_2 + \ldots a_{1n}X_n)] + \ldots + \lambda_k[b_k - (a_{k1}X_1 + a_{k2}X_2 + \ldots a_{kn}X_n)] + \ldots + \lambda_m[b_m - a_{m1}X_1 + a_{m2}X_2 + \ldots a_{mn}X_n)]\} \qquad A2.5$$

Equation (A2.1) is the objective function to the more general form $f(X_1, \ldots, X_n)$ for a non-linear programming problem. Equations (A2.2) to (A2.4) are the constraints. The X's are the decision variables. The a's are the fixed resource requirements per unit and the b's are the available resources.

After using differential calculus, taking first-order conditions, each choice or decision variable in the equations (A2.5) including the Lagrangian multiplier (λ) is solved in terms of other coefficients and constants (a's, b's and c's) for the optimal values. The Lagrangian multiplier is then interpreted as the marginal effect on the objective function from one unit increase or decrease of the constraint variables.

A further breakdown is to carry out a comparative static analysis to check the effect of any changes in the exogenous parameters, the coefficients and the constants, on the optimal solutions. In some cases, the professor may extend the illustration to include specific functions in the objective function. Cobb-Douglas or CES functions come to mind. Envelope theorem and Kuhn-Tucker conditions (Binger & Hoffman, 1998; Chiang & Wainwright, 2005) are other techniques the professor might apply in solving optimization problems in a graduate economics course.

Task Pacing Behaviors in Student Teams: An Experimental Study

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ABSTRACT

The increasing adoption of team structures in business encourages the use of team assignments in higher education for the purpose of providing students with valuable team experience critical to their future career success. Improper task pacing behaviors, such as rushing to deliver products near the deadlines, often lead to poor team performance. Thus, a better understanding of task pacing behavior in student teams will not only help instruct students with appropriate team behaviors, but also provide valuable implications to team practices in the real business world. This research proposes a task-pacing model to study the influences of team characteristics and team interactions on teams' task pacing behaviors. 65 student teams participated in the study. Results suggest that as team progresses, the development of shared temporal cognitions regarding the temporal aspects of task execution is mostly affected by members' temporal reminding activities; the shared temporal cognitions as well as members' individual task pacing styles strongly influence the team's task-pacing behaviors and ultimately affect team performance. Implications for both education and team research are also discussed.

INTRODUCTION

Modern organizations have increasingly adopted the team approach as a way of accomplishing tasks which surpass the capabilities of single individuals (Glassop, 2002). Teams are expected to enable organizations to "better utilize expertise, minimize the impact of increasing workload on one individual, and maximize the use of increasingly more sophisticated technology." (Smith-Jentsch, 2001; p. 179). Such a belief encourages the use of team assignments in higher education for the purpose of providing students with valuable team experience critical to their future career success.

Improper task packing behaviors often lead to poor team performance (Gersick, 1988; 1989). Teams need to place close attention to time and adapt their task-execution behaviors accordingly (Waller et al., 2002). Meeting schedules and deadlines has been widely viewed as a norm for successful project development (Yourdon, 1997). Practitioners consistently rate ineffective schedule management as one of the top causes for project failures (Kappelman et al., 2006; Standing et al., 2006).

Many student teams tend to act late and rush to deliver products at the last minute by deadlines (Gevers et al., 2006). Thus, a better understanding of task pacing behavior in student teams will not only help instruct students with appropriate team behaviors, but also provide valuable implications for team practices in real business settings.

This study attempts to investigate the task pacing behaviors of student teams. The rest of paper is organized as follows. First, previous studies of time management and task pacing behaviors are reviewed. A research model is developed to test the validity and relevance of a proposed construct of shared cognitions of task pacing. An experimental study is conducted. The paper ends with a discussion of the implications of the results for both education and team research.

THEORETICAL BACKGROUNDS AND HYPOTHESES

Team researchers have long recognized the significance of schedules and deadlines to the execution of tasks in project teams. For example, Gersick (1988; 1989) found that the urgency of deadlines helps teams alternate the inertia in team behaviors and themes through which they approach their work. As time passes, the awareness of deadline will alert team members the necessarily of adjusting their behaviors to assure the project being completed within schedule. McGrath and O'Connor (1996) posited that schedules and deadlines serve as an important mechanism for synchronizing group activities by specifying who is supposed to do what, when tasks should be completed, and how the combination of individual efforts should ultimately produce the desired end-product. Waller et al. (2002) found that groups steadily increase attention to time as deadlines near, and engage in task transitions at or near the midpoint of allotted time.

Shared Temporal Cognitions–A Cognitive Ground for Task Pacing Behaviors

In order to complete a project on time, team members must share a consistent understanding of project deliverables and due dates (Kappelman et al., 2006; p. 35). Meeting schedules and deadlines can be achieved when team members "acknowledge, accept, and adhere to these schedules and deadlines." (Gevers et al., 2006; p. 53). Therefore, the shared understanding of schedules and deadlines within a team may serve as a cognitive ground for the team to coordinate members' activities under time constraints.

Gevers and colleagues (2006) proposed the concept of shared temporal cognitions as the temporal aspect of team cognition to study team task pacing behaviors. Shared temporal cognitions is defined as "the extent to which group members have congruent mental representations of the temporal aspects of a specific group task" (Gevers et al., 2006). In consistent with other aspects of team cognition, shared temporal cognitions are expected to provide a team with the cognitive foundation upon which the team can effectively arrange and synchronize task executions among members to meet with schedules and deadlines, and ultimately achieve satisfactory outcomes.

Antecedents of Shared Temporal Cognitions

The development of team cognition requires frequent interactions among team members such as communications and working together (He et al., 2007). Similarly, the development of shared temporal cognitions needs team members to interact with one another regarding the temporal requirements of assigned tasks. Gevers and colleagues (2006) developed a construct of temporal reminders to depict the special activities that team members "remind each other of deadlines and urge one another to stick to task schedules to make sure that subtasks are completed on time (p. 56)." These reminding activities draw attentions from team members on time constraints for task execution, and set grounds for the development of shared temporal cognitions within the team.

H1 The exchange of temporal reminders is positively associated with the level of shared temporal cognitions.

In addition to team interactions, some team characteristics may also influence the development of team cognition (He et al., 2007). Two team characteristics, team size and members' individual time pacing styles, are investigated in the study as possible antecedents of shared temporal cognitions.

The team literature advocates small team size for a manageable project development process in that a smaller group of people are easier to be motivated than a larger group of people. One disadvantage of large teams is the lack of commitment to team performance from some, if not all, team members. Compared with small teams, individuals in large teams are more likely conclude that there is no perceptible difference between contributing and not contributing, therefore increasing the tendency of free-riding (Albanese and Van Fleet, 1985). Without strong commitments to team performance, team members will not pay much attention to project details such as schedules and deadlines, leading to a poor development of shared temporal cognitions in the team. Thus, it is reasonable to expect that team size has a negative effect on the development of shared temporal cognitions.

H2 Team size is negatively associated with the level of shared temporal cognitions in the team.

An individual's time pacing style represents the person's preference for the allocation of time under deadline conditions. "While some people prefer a steady work pace and tend to spread out task activities evenly over time, others have a preference for working under the pressure of the deadline and wait until it comes very near before they start working on the task (Gevers et al., 2006; p. 55)." Generally speaking, people with early task action styles tend to be sensitive to time, and pay much attention to schedules and deadlines; in contract, people with late task action styles are less sensitive to time, and are reluctant to act until the approach of deadlines.

The underlying reasons for different time pacing styles, either cognitive or psychological, are still in debate among researchers (Koch and Kleinmann, 2002, Loewenstein and Thaler, 1997; Loewenstein and Prelec, 1993). However, it has been observed that one's time pacing style is a personal characteristic and relatively stable over time and across tasks (Gevers et al., 2006). Thus, the pattern of individual time pacing styles across members, both the average and the within-group similarity, will inevitably affect the overall behavior of the team.

The average of members' time pacing styles indicates the overall tendency of team members to act, either early or late, toward deadlines. Shared temporal cognitions are likely to be well developed if most team members respect the urgency of deadlines, and present a preference for early task action. In contrast, teams with an average of late task action styles are formed with people who are less sensitive to time. Shared temporal cognitions could be poorly developed due to the lack of attention on schedules and deadlines among members.

H3 The tendency of early task action among team members' time pacing styles is positively associated with the level of shared temporal cognitions in the team.

In addition, team members with similar time pacing styles are more likely to form a shared understanding of the temporal aspects of task executions, therefore develop high levels of shared temporal shared cognitions; in contrast, team members with distinct time pacing styles may have to spend scarce time and cognitive resources to negotiate the meanings of schedules and deadlines in order to form an agreed-upon understanding. In their experimental study of shared temporal cognitions, Gevers and colleagues (2006) found that the similarities of individual time pacing styles help the formation of shared temporal cognitions especially during the early stages.

H4 Similarity among team members' time pacing styles is positively associated with the level of shared temporal cognitions in the team.

Team Task Pacing Behaviors

A team's task pacing behavior represents how the team schedules and arranges task execution activities among members to deliver products as required. The special team behavior is an overall representation of each member's time pacing activities on the execution of assigned tasks. Individual behaviors serve as the building blocks for the team behavior in that a team is a special group of people "who must interact cooperatively and adaptively in pursuit of shared valued objectives" (Cannon-Bowers et al., 1993; p. 223).

It has been observed that a team manages its task pacing behavior largely based on the urgency of deadlines (Gersick, 1988; 1989) and the sufficiency of time for task execution (Waller et al., 2002). However, the inertial of people's personal time pacing styles (Gevers et al., 2006) will inevitably influence their behaviors in team settings. It is reasonable to expect that the pattern of members' time pacing styles, both the average and the similarity, will affect the overall task pacing behavior of the team.

H5 The tendency of early task action among team members' pacing styles is positively associated with early task action behavior of the team.

H6 Similarity among team members' pacing styles is positively associated

with early task action behavior of the team.

Shared temporal cognitions reflect the temporal aspect of team cognition (Gevers et al., 2006). Thus, shared temporal cognitions are expected to exert strong effects on team task pacing behavior similar to the impact of team cognition on team behaviors.

The concept of team cognition has been proposed as a valid theoretical lens for examining team interaction behaviors (Cannon-Bowers et al., 1993; Cooke et al., 2000; Klimoski and Mohammed, 1994). Effective teams need to exchange and process information and knowledge among team members. Such team interactions require both time and cognitive resources (MacMillan et al., 2004). Team cognition enables members to formulate accurate teamwork and taskwork predictions (Cannon-Bowers et al., 1993; Katz and Tushman, 1979), adapt their activities and behaviors in a collaborative way, and thereby increase overall team effectiveness (Cannon-Bowers and Salas, 2001; Lewis, 2004). Without well-formed team cognition, team members will not be able to efficiently share knowledge and information, coordinate each other's activities, resolve conflicts, or negotiate agreed-upon solutions (Cannon-Bowers and Salas, 2001; Jackson et al., 1995; Walsh, 1995).

The above arguments holds valid for shared temporal cognitions. A shared understanding among team members regarding schedules and deadlines will remind members the scarcity of time, allow them to negotiate and manage their task execution behaviors in a synchronized fashion, and help the team speed up the execution of tasks to meet deadlines.

H7 The level of shared temporal cognitions is positively associated with early task action behavior of the team.

Appropriate team behaviors will enhance the chance for a team to achieve satisfactory outcomes. Given the common scarcity of time for most projects, teams with early task action behaviors will have a better chance to meet deadlines with quality products due to the full utilization of available time since the start of team tasks; in contrast, teams with late action behavior overlook the pass of time at the beginning and rush to deliver products around the last minute during the allotted time period. Such a rush will not only introduce the risk of failing to meet deadlines; the quality of team products is also likely to be suffered.

H8 Early task action behavior of a team is positively associated with team performance.

The above-mentioned hypotheses are summarized in the research model of Figure 1.

RESEARCH DESIGN

The study selected student project teams as the research subject. Beyond the practical advantage of sampling convenience, the decision was made mainly for the expected homogeneity among student backgrounds, which would lower the risk of unexpected confounding effects caused by diversity among ages, experiences, organizational culture, management levels etc.

The task employed in this study was the development of a relational database system using Microsoft Access. Except for team formation and task deadline, participants were free to set their own schedules and procedures to carry out their tasks, simulating the system development process in a realistic manner.

Participants

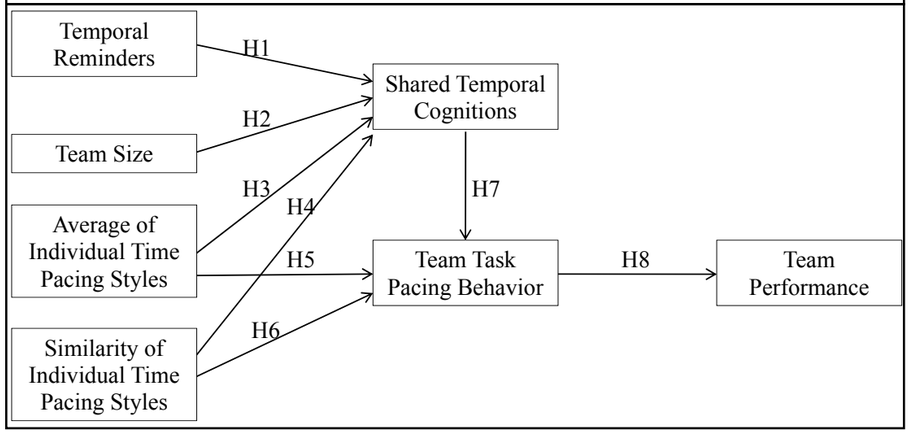
192 undergraduates enrolled in an information systems course formed teams to fulfill a course requirement of collaboratively developing a relational database system over a 5-week period. The students were juniors (about 24%), seniors (about 65%), and fifth-year business majors (about 11%). When the project was assigned, students were instructed to form three-member teams and were allowed to make their own teammate selections. Sixty nine teams were formed: 23 teams with two members, 26 teams with three members, and 20 teams with four members.

Data Collection

Data were collected through two surveys distributed at the beginning and end of the database development team project. The purpose of designing two surveys was to reduce possible common-source bias by separating the measurement of predictors and dependent variables (Podsakoff et al., 2003). More specifically, participants were instructed to answer questions about their individual task pacing styles during the first week of the project; just before the submission of their work, participants took the second survey with regard to the execution of their team tasks, including the activities of exchanging temporal reminders, the task pacing behaviors, and performance of their teams.

Although encouraged by the course instructor, taking the survey was voluntary. Students were told that the survey responses would not influence their grades in any way. Some students failed to answer the survey on time, and some submitted incomplete answers. This resulted in 208 usable sets of individual data for analysis, or a 75% effective response rate.

FIGURE 1
RESEARCH MODEL



Measurement

This study attempts to investigate task pacing behaviors in student teams. The measurements of involved constructs are summarized in Table 1. All the measures were adopted from the literature with proven validity.

RESULTS

Construct Validity

The test of construct validity was conducted with Partial Least Squares (PLS) – a structural equation modeling (SEM) technique that has been commonly used in IS research. Similar to other SEM techniques (e.g., LISREL), PLS tests the validity of constructs and the structural model at the same time, and is therefore considered methodologically rigorous when compared with regression-based techniques who separate the test of construct validity (e.g., factor analysis) from the test of the research model (Gefen et al., 2000). Two other distinctive features of PLS made the technique a particularly suitable testing tool for this study:

1. PLS, which is component-based rather than covariance-based, has the flexibility of accepting single-item constructs (i.e., team size, individual time pacing styles, and team task pacing behaviors in this study);
2. Compared with other structural equation modeling software such as LISREL, PLS does not require large sample size, and is particularly suitable for an explorative study (Gefen et al 2000).

Table 1
Instruments

Constructs	Instruments	Sources
Temporal Reminders	A three-item instrument that asked participants to rate the extent to which they provided one another temporal information (schedules and deadlines) of tasks.	Gevers et al., 2006.
Shared Temporal Cognitions	A 4-item instrument that asked participants to rate the extent to which team members had shared cognitions regarding the temporal aspects of task execution.	Gevers et al., 2006.
Individual Time Pacing Styles	Participants selected one of five graphs (on a 1 to 5 scale, with 1 represented early action pacing style and 5 represented late action pacing style) that best represented his/her style of using time under deadline conditions.	Lim and Murnighan, 1994; Blount and Janicik, 2002.
Average of Individual Time Pacing Styles	The mean of members' selections of time pacing styles within a team.	Gevers et al., 2006.
Similarity of Individual Time Pacing Styles	The standard deviation of members' selections of time pacing styles within a team.	Gevers et al., 2006.
Team Task Pacing Behavior	Derived from the concept of individual time pacing styles. It is measured by team members' selection of one of five graphs that best represented the team's use of time under deadline conditions.	
Time Size	An objective measure of the number of students in a team.	
Team performance	A five-item instrument that asked participants to rate the extent to which they were satisfied with the performance of their teams.	Robey et al., 1993; He et al., 2007.

Notes:

1. Reliability: composite reliability calculated in PLS; AVE: average variance extracted; wg(j): mean inter-rater agreement
2. Numbers in bold on the leading diagonal are the square root of the average variance extracted (AVE) among measures† These constructs are assessed by single-item measures
3. Off diagonal elements are correlations among constructs.

Assessing construct validity follows the conventional practice based on the examination of construct reliability, convergent validity, and discriminant validity. Construct reliability can be assessed by composite reliability calculated in PLS (should be larger than 0.70). Convergent validity can be assessed by the average variance extracted (AVE) among measures (should be larger than 0.50). Discriminant validity can be assessed by comparing the square root of AVEs and inter-construct correlations – the former should be larger than the latter to support disciminant validity. Close examination of Table 2 suggested that all the conditions were satisfied. Thus, validity of the constructs under study was concluded.

Table 2
Inter-Construct Correlations

	Reliability	AVE	wg(j)	1	2	3	4	5	6	7
Temporal Reminder	0.96	0.89	0.77	0.94						
Average of Individual Time Pacing Styles†	-	-	-	-0.50	-					
Similarity of Individual Time Pacing Styles†	-	-	-	0.10	-0.27	-				
Team Size†	-	-	-	0.03	-0.16	-0.02	-			
Shared Temporal Cognition	0.95	0.84	0.87	0.53	0.32	0.09	0.19	0.91		
Team Task Pacing Style†	-	-	0.74	0.18	0.43	-0.38	0.08	0.35	-	
Team Performance	0.94	0.80	0.78	0.37	0.31	0.26	0.37	0.44	0.58	0.90

Notes:

1. Dashed lines indicate insignificance with $p>0.05$ (2-tailed).
2. $*p<0.05$; $**p<0.01$; $***p<0.001$ (2-tailed)

Hypothesis Testing

The test of the research model and the results are presented in Figure 2. Examination of the resulting path significances suggested that hypotheses other than H2, H3, and H4 were supported by the data sample at $p<0.05$ level (two-tailed). The effects of team size, average of individual task pacing styles, similarity of individual task pacing styles on shared temporal cognitions were found to be insignificant. Similar results have been reported in Gevers et al (2006), suggesting limited effects of team characteristics on the development of shared temporal cognitions.

The research model was then revised by dropping the insignificant paths from the original model. The testing results of the revised model are presented in Figure 3.

Figure 2
Testing Results

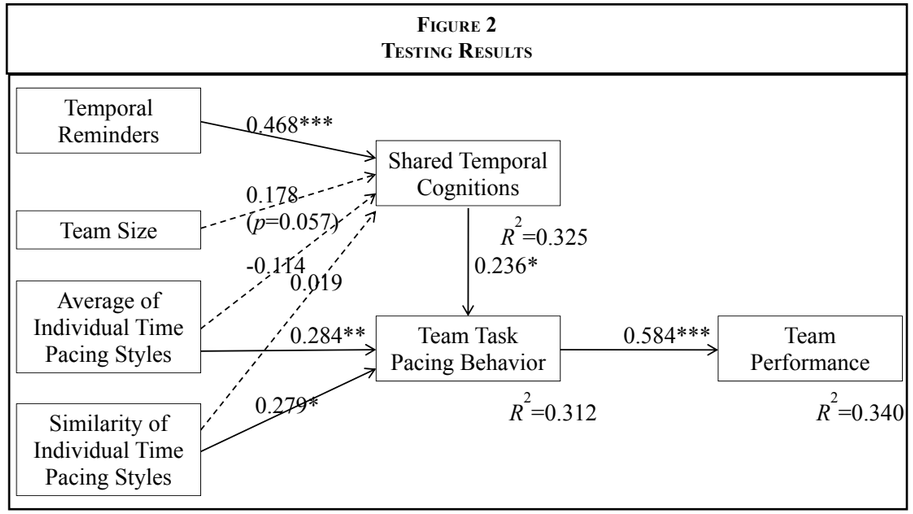
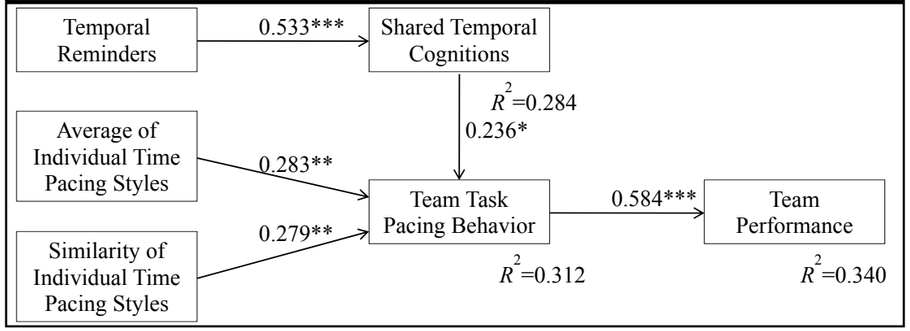


Figure 3
Revised Mode



The revised model well interpreted the sample data with significant path coefficients (all with p<0.05), acceptable R^2, and good construct reliability with high levels of internal consistency (Gefen et al., 2000). In addition, the predictive power on team task pacing behavior was moderately satisfactory, with 31% of the variance being explained by the three investigated predictors. The results support the arguments that a team's task pacing behavior is strongly influenced by members' time pacing styles and the level of shared temporal cognitions; the latter is mostly affected by team interactions regarding the exchange of temporal information of tasks, i.e., schedules and deadlines.

SUMMARY AND DISCUSSIONS

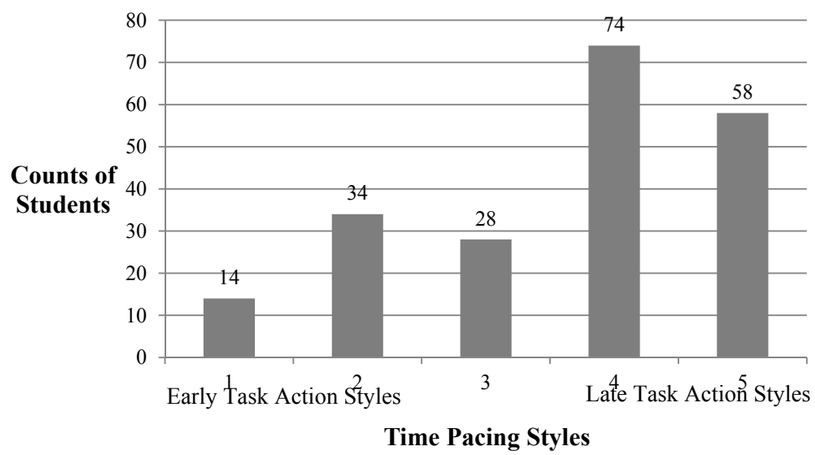
Meeting schedules and deadlines has long been recognized as a norm for effective project teams (Yourdon, 1997). However, the mechanisms through which certain task pacing behaviors are formed have not been well studied in the literature (Gevers et al., 2006). This study attempts to investigate the task pacing behaviors in student teams. The data from the sampled student teams shows that both the pattern of members' time pacing styles and the level of shared temporal cognitions strongly affect a team's task pacing behavior. In addition, task pacing behavior will affect team performance in that teams with early action behaviors are more likely to achieve satisfactory performance than their counterparts.

It is not uncommon for instructors to urge students for early execution of assignments. Results of the study strongly support the practice with empirical evidence that acting early will help a team achieve satisfactory outcomes. Unfortunately, many students select to act late on assigned tasks. Figure 4 presents the distribution of time pacing styles among the sampled 208 students, of which 48 students (or 23%) reported a personal tendency toward early action pacing styles (1 and 2 on the 1-5 scale of the survey instrument), and 132 students (or 63%) reported a personal tendency toward late action pacing styles (4 and 5 on the 1-5 scale of the survey instrument). The average tendency of time pacing is 3.62 with a standard deviation of 1.24.

Such a tendency toward late task action among the sampled students influenced the pacing behavior of their teams. The average task pacing behavior of the participated teams was 3.26, with a standard deviation of 0.82. To improve team performance, most student teams need to alter their task pacing behaviors toward early action styles. One effective mean of doing this is to develop a high level of shared temporal cognition through frequent exchange of temporal information of tasks (e.g., schedules and deadlines) among members.

One may note a strong correlation between shared temporal cognitions and team performance (r=0.44, p<0.001) in Table 2. From a data-analysis perspective, the correlation suggests that shared temporal cognitions exert a strong

Figure 4
The Distribution of Time Pacing Styles Among Sampled Students

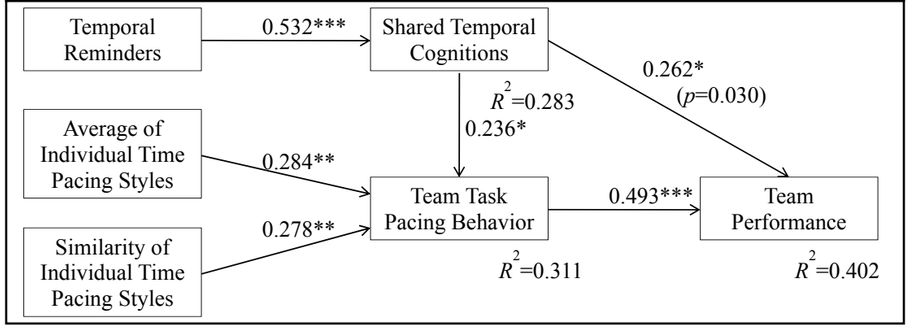


influence on team performance; such an influence might not be fully mediated by team task pacing behavior.

To clarify the issue, a modified model was tested with an additional path from shared temporal cognitions to team performance. The results are presented in Figure 5.

The additional path demonstrated statistic significance with p=0.030 (two-tailed), suggesting that team task pacing behavior only partially mediates the effects of shared temporal cognitions on team performance. This finding is inconsistent with Gevers et al. (2006), in which the researchers failed to find that a team's shared temporal cognitions help the team meet deadlines. The different design between the current study and Gevers et al. (2006) may explain the discrepancy: 1) the current study used a five-item instrument to measure team performance while Gevers et al. (2006) focused only on meeting deadlines; 2) the current study has a larger sample (N=65) than that of Gevers et al (2006) (N=29 for the specific test); thus, the current study has a bet-

Figure 5
The Effects of Shared Temporal Cognitions on Team Performance



ter chance to detect an effect that is moderate in magnitudes.

All the constructs except team size were self-reported by sampled students. Thus, common-method bias could be a concern for the study. By aggregating individual responses to form team level measures, this concern may be alleviated in that multiple responses could cancel out each other's errors. In addition, the employment of two surveys that separate the measurement of predictors and dependent variables also helps to reduce common-source bias (Podsakoff et al., 2003).

This study selected student project development teams as the research subject. Thus, special caution is needed when applying the findings to teams of other settings. Student teams differ from other teams in many ways. For example, the incentive systems are weak in student teams mostly because of the lack of severe consequences of failing to meet schedules and deadlines; but in real business settings, failing to meet schedules and deadlines is likely to affect the performance assessment of a project team and even the prosperity of one's career. Future research is desired to test the generalizability of the findings in various contexts.

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MBAs' Written Message Creation Technology and Preparation

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ABSTRACT

This study attempted to reveal the types of assistance available for business professionals for the creation of business messages, the methods with which these messages are being encoded on the job, and perceptions of the training they got to help them encode messages. Data were gathered through a questionnaire administered to those who graduated from MBA programs from three mid-major AACSB-accredited programs. As one-third of business professionals with MBAs had absolutely no administrative help, many professionals formatted a variety of documents themselves. Also, business professionals used different methods more or less prevalently based upon the type of document. However, voice recognition was rarely used.

INTRODUCTION

Information overload is becoming more and more of an issue for today's business professionals and educators. Written business communication is flying around at a frantic pace, and has been for some time, even before texting was prevalent. In 2001, International Data Corporation estimated "that the average office worker spends 49 minutes a day on e-mail, while top management devotes nearly four hours to it" (cited in O'Rourke, 2004, p. 147). At the turn of the millennium, Jennings and Vice (1999) found that executives in multinational corporations wrote 2 to 5 messages a day; however, with e-mail added in, the figure rose to 50 and 100 a week. For these executives, the typical length of a document was one to two pages.

Boles (1997) revealed the average Fortune 1000 employee sends and receives about 178 messages per day; no doubt a large amount of those are written messages. In a study by the Forbes and Gartner Groups (cited in Martin, 2004) it was discovered that 82% of top executives, including CEOs, check e-mail before work and only 6% allow an assistant to do that particular task for them. Also, since these 1990s studies were done, text messages and even more e-mail have greatly increased the number of messages done solely by the professional.

Today, just focusing on e-mail, 200 billion e-mails are sent per day and 70% get through even the best spam filters (Soat, 2007). With this figure, it is no surprise that e-mail marketing easily overtook direct mail two years ago ("Email," 2007). More recently, Intel employees indicated at least two hours per day spent on e-mail, with most getting 325 messages per day (Hemp, 2009). Fifty-one percent check e-mail four times per day; almost half say they're addicts, checking e-mail on vacation, in the bathroom, while driving, and in church (AOL, 2008). With text messages added in, the numbers hold even more potential for overload. Indeed, 95% of text messages are read, and according to SNL Keagan, "in 2007, 84% of the U.S. population had cell phones" that included such use (cited in Perkins, 2009, p. 26). The sheer quantity of business messages created by professionals gives some idea of the impact business writing has on the workplace.

With the quantity per day of written messages of all types, the method of correspondence has a great impact on time, and therefore profit margin. The quantity and type of written communication created directly relates to productivity; however, the method utilized for creation perhaps

even more greatly has a bearing on the productivity involved with message creation. Overall time consumed with writing can be reduced with the most productive mix of written communication creation types and methods used to create those types. Roach (1991) found that office/information workers actually saw a decrease of 6.6% and more "blue collar" production workers saw an increase in productivity by 16.9% from the mid-1970s to the mid-1980s. This information is apt considering the 1980s seemed when personal computing became rare to commonplace.

With this huge emphasis on writing business messages due to the sheer volume, professionals must be well trained. However, some business education programs have difficulty training students on the latest technology for several reasons, including faculty reticence and that new technology often reaches trainers last (Lundgren, 1999). This has been the case for some time, as Grever and Zimmerman (1988) determined that automated office equipment was greatly lacking at the secondary and postsecondary levels.

An example of this situation lies with keyboarding, once a staple of secondary programs and currently necessary for most business professionals. Computers are a given presence in millions of offices today, yet keyboarding training, the most basic skill involved with almost anything done in a timely manner in business, sometimes can have a slim backing in education.

Many studies have shown that good keyboarding skills boost productivity on the job (Schueler, 1989; Wentling, 1990; Zhao, 1996). However, Jennings (2001) found that at the middle school level, which consensus generally recommends is the optimum level to offer such training, only four states required keyboarding training and eight states indicated the curriculum choice was made by independent districts. In addition, 34.3% of all responding states that did offer keyboarding revealed that it did not even count as a "core curriculum" elective that would be sufficient for graduation (Jennings, 2001, p. 47). This situation is almost bipolar to a 1961 study that cited 91% of schools offered typing as a full one-year course (United Business Education Association, 1961).

In perhaps more far-reaching implications, a study of secondary business teachers by Hosler, Jacobson, and James (2003) found that courses most recently added to the curriculum were personal finance, web page design, and business law. The courses most often dropped by institutions all related to office productivity: speedwriting, business procedures, and keyboarding. This lack of skill also greatly impacts texting, with the abundance of QWERTY text devices on the market, and may even help prevent DeQuervain's tendinitis (Blackberry thumb). Surely, the increase in communication technology should also demand input training for speed and accuracy.

LITERATURE REVIEW

There has been little research recently available on methods for how business professionals are creating written business messages. However, in the past, several studies illustrated methods that seem very antiquated with today's methods. Kirby and Oliver found in 1988 that administrative support personnel keyed documents from their superior (a business professional) from various ways of initial draft creation. Most often, the professional had used longhand to create the document—89% of personnel reported keying documents from longhand. There was also a presence of shorthand (27%), machine transcription (48%), and a strong showing of assistants who key the rough drafts composed by their manager (89%). In a linkage with office automation and method, the same study reported that 78% of administrative assistants used a typewriter; only 6% used a modem in 1988 to complete communications for the professional.

Even as late as 1991, Andera found that professionals, most of whom held degrees, still preferred to create written communications by using the handwritten technique. Coming in second was dictation to machine, even if that method of creation was unavailable (29%). The next used method was to personally type the communication (19%); although at that point, professionals preferred dictation to secretary (18%). The least preferred method was to personally type the communication. Wiggs (1992) also discovered the wide usage of handwritten communications, particularly among older managers.

One method of creation of interest in the past was dictation. In the past, Storms (1983) found dictation in some form was used by more experienced degree-holders on the job, as 47% used dictation. In 1992, Alexander (1992) found that dictation was very rarely used, if at all.

Obviously, the trend in the early 1990s began to shift to professionals who chose their own desk PCs most often when writing (Porter, 1989; Wiggs, 1992). Thus, opportunity cost represents the crux of productivity in this regard. Time spent on written documents constitutes an opportunity cost of sacrificing the time that could be spent on another managerial task. The time saved by creating the most efficient types of communications in the clearest manner saves money through time, and an investigation into written composition methods may be helpful to those who educate future professionals.

PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

The purpose of the study was to reveal information regarding how written business communications in the workplace are currently being created. The study sought to provide information and subsequent implications regarding: (1) What technology and human assistance is available daily to business professionals for composing workplace written business messages, (2) What methods and frequency of those methods do business professionals utilize to create differing types of written business communications?, and (3) What comments do professionals have regarding written communication methods of creation?

RESEARCH METHODOLOGY

The research methodology consisted of survey questionnaire development and administration to gather data toward the proposed research questions. The population of the study consisted of graduates of the last ten years of three AACSB-accredited Master of Business Administration programs. Names and mailing addresses of MBAs were obtained from the alumni relations offices of each university and went through IRB processes. The population for the study was delineated by a characteristic that implied responsibility for duties in a managerial capacity, including the creation of various written messages and documents.

The population was composed of graduates from three institutions of varying sizes, though all were public universities. More specifically, with regard to the Carnegie Classification system, one institution represented the classification of (Prof+A&S/HGC; CompDoc/MedVet), one institution represented (Prof+A&S/SGC; Postbac-Comp), and the third institution represented (Bal/SGC; Postbac-Prof/Bus) ("Carnegie," 2009). The population of MBAs was restricted to include only domestic addresses of graduates.

The instrument used to collect data was further developed by use of a 22-member panel of experts. Business communication faculty nationwide were identified via DPE (Delta Pi Epsilon) and ABC (Association of Business Communication) involvement and aided in the development for validity and reliability of the instrument. After adjustments to the instrument were completed as per suggestions of the panel, a sample of 100 subjects was randomly chosen from the population of 1330 to receive the pilot study mailing. All suggestions from this sample were considered to create another revised instrument, which was further checked for reliability before being sent to all subjects in the population.

An attempt was made to resend all surveys that were returned due to invalid addresses. With the help of a follow-up postcard, the final overall return rate for the study was 38.7% (401 returns of 1034) from those confirmed to have received the mailing. However, of 401 respondents, 29 indicated they did not create written business messages on a regular basis. In sum, with these non-message creating respondents subtracted, there were 372 useable, completed surveys (representing 35.9% of the population of 1034).

To illuminate any possible threat to validity through determination of the prospect for non-response bias, random items were analyzed according to two groups of subjects—those 30 of 372 respondents who were the first to return the instrument against the last 30 who responded, representing a six week time gap. Through comparing these two groups of subjects on random

questionnaire items, no statistically significant difference was revealed.

FINDINGS BY RESEARCH QUESTION

To help put the findings of the study in perspective, demographic information from MBAs in the sample is shown in the following section, such as gender, age, job title classification, and organizational classification.

Respondent Demographics

Diversity was apparent in the reflection of the wide range of respondent demographic characteristics. MBAs of the three sampled universities were 54.0% male and 45.7% female (201 and 170, respectively, of 372 survey respondents). Also, of 372, 47.6% (177) were below age 35 and 52.2% (194) were 35 and older. Respondents were scattered throughout the United States, with a concentration in the Midwest and Southeast. Every business undergraduate major was represented, with accounting constituting the majority. Most of 372 classified themselves as "professional staff" (38.7% or 144), with middle management (28.8%; 107), senior management (17.2%; 64), and first-line supervisory (6.7%; 25) as the major descriptions, and with a few "others" at very low percentages comprising the remainder. Lastly, 372 MBAs placed their organizations in a myriad of classifications, with manufacturing as the majority (23.2%; 86), along with a strong presence from financial/insurance/real estate (17.0%; 63), services, including hospitals (14.8%; 55), and education (14.0%; 52).

What technology and human assistance is available daily to business professionals for composing workplace written business messages?

As resources deemed appropriate for business message creation seem to fall into two categories—technology/office machines and human resources—two questions posed on the survey instrument to business professionals attempted to gain information in both of these areas.

Of all potential message creation technology presented in Table 1, the largest percentage (96.8% or 360) indicated access to e-mail. Interestingly, that figure for e-mail access is 7% higher than computer with word processing software, which ranks second among available technology. Much other accessible technology as indicated by professionals is included; namely, almost three-fourths have laptops (67.7%), and a quarter have access to PDAs, cell phones, Blackberrys, and other portable messaging systems (27.1%). Perhaps the greatest mystery of the study is the reason why this number for portable messaging systems is so low. It is possible that professionals construed the survey question to mean solely for business messages, when many message systems are used mostly for personal matters.

The typewriter still seems to have a somewhat strong presence in business offices, as almost a quarter of professionals claim to have access to it. However, one machine that used to have a much larger usage in business offices only now has 9 professionals of 371 that claim access—the dictation unit. Also, it is interesting that only 3.2% of professionals even knew if they had voice recognition technology, let alone ever use it.

Table 1
Availability of Technology for Creating Business Messages/Documents

What technology for composing business messages/documents do you have access to in your work area (or on a business trip)?

Technology	n	%
E-mail	360	96.8
Computer with word processing software	333	89.5
Laptop/tablet PC	252	67.7
PDA, Blackberry, cell phone message system	101	27.1
Typewriter	88	23.7
Computer with voice recognition software[a]	12	3.2
Dictation unit	9	2.4
(Not responding)	1	0.3
Total	N/A	N/A

[a] 2 respondents specifically indicated they have access to Microsoft OS voice recognition and 5 indicated they have Dragon Naturally Speaking.

In addition to the available technology summarized in Table 1, available human assistance, in the form of administrative assistants, is shown in Table 2. Roughly half (180 or 48.4%) of all respondents indicated that they share administrative assistant(s) with other professionals; also 145 (39.0%) have no administrative assistance available at all. Only 38 (10.2%) of business professionals indicated an available full-time assistant and 11 (3.0%) indicated a part-time assistant who works solely for the professional.

As accessible resources have a direct bearing on the method of creation by type of business message, that topic was the focus in Tables 3-7. It is important to note that more traditional business messages with some potential for length were included; thus, text messages were omitted from the instrument. E-mail is also still considered the staple of electronic business communication (Goldsborough, 2007).

Table 2
Availability of Administrative Support in Message Creation

What level of administrative support is available to assist with your business message/document preparation?

Administrative Support Level	n	%
Full-time (40+ hours per week) administrative assistant who works only for me	38	10.2
Part-time (<40 hours per week) administrative assistant who works only for me	11	3.0
Share administrative assistant(s) with other professionals	180	48.4
No administrative assistance available	145	39.0
Other[a]	4	1.1
(Not responding)	1	0.3
Total	N/A	N/A

[a] Responses were mostly infrequent volunteers who periodically visited the professional's office.

Table 3
E-Mail Messages Created by Method and Frequency

	Frequency of Use				
Method	Always	Sometimes	Never	Not Responding	Totals
Key and complete myself with no assistance	357 (96.0%)	11 (3.0%)	1 (0.2%)	3 (0.8%)	372 (100.0%)
Key a draft for assistant To edit and complete	17 (4.6%)	32 (8.6%)	290 (77.9%)	33 (8.9%)	372 (100.0%)
Dictate to voice recognition and complete myself	3 (0.8%)	5 (1.3%)	332 (89.3%)	32 (8.6%)	372 (100.0%)
Dictate to voice recognition and assistant completes	0 (0.0%)	4 (1.1%)	335 (90.0%)	33 (8.9%)	372 (100.0%)
Dictate directly to assistant Or dictation unit	2 (0.5%)	21 (5.7%)	318 (85.5%)	31 (8.3%)	372 (100.0%)
Handwrite for assistant to edit and complete	1 (0.3%)	22 (5.9%)	317 (85.2%)	32 (8.6%)	372 (100.0%)

Table 4
Memos Created by Method and Frequency

	Frequency of Use				
Method	**Always**	**Sometimes**	**Never**	**Not Responding**	**Totals**
Key and complete myself with no assistance	289 (77.7%)	66 (17.7%)	11 (3.0%)	6 (1.6%)	372 (100.0%)
Key a draft for assistant to edit and complete	18 (4.8%)	79 (21.2%)	239 (64.3%)	36 (9.7%)	372 (100.0%)
Dictate to voice recognition and complete myself	1 (0.3%)	10 (2.7%)	330 (88.7%)	31 (8.3%)	372 (100.0%)
Dictate to voice recognition and assistant completes	0 (0.0%)	5 (1.3%)	335 (90.1%)	32 (8.6%)	372 (100.0%)
Dictate directly to assistant or dictation unit	3 (0.8%)	31 (8.3%)	307 (82.6%)	31 (8.3%)	372 (100.0%)
Handwrite for assistant to edit and complete	4 (1.1%)	69 (18.5%)	269 (72.3%)	30 (8.1%)	372 (100.0%)

What methods and frequency of those methods do business professionals utilize to create differing types of written business communications?

Table 3 shows that when business professionals compose e-mail messages, the most used method is to key the message and complete it themselves with no help from any available administrative assistants—357 or 96.0% indicate they "always" choose this method. This finding may indicate the continuing private nature of business e-mail. The next most used method, to "always" "key a draft for assistant to edit and complete" was only used by 17 persons (or 4.6%). Less than 9% ever use an assistant for e-mail and less than 2% use voice recognition.

In the creation of memos, there is a much greater dispersion of methods "sometimes" used than with e-mails. As shown in Table 4, many professionals (77.7%; 289) indicate they "always" key and complete memos on their own, and 79 or 21.2% say they "sometimes" key a draft for assistant to complete. Other methods reported for memo creation are of negligible use.

Methods and frequency of composing letters closely parallels the previous information concerning memos, as seen in Table 5. Most professionals (249 or 66.9%) "always" create letters themselves with no assistance. However, 103 (27.7%) claim to "sometimes" key a draft for assistant to complete.

The frequency of method used in the creation of forms (Table 6) seems to be the most unique of the types of messages examined. A lesser number of professionals complete them solely on their own than any other type (197; 53.0%). Therefore, a quarter "sometimes" key a draft for assistant to complete (102; 27.4%), handwrite for assistant to complete (88; 23.7%), or dictate directly to assistant or dictation unit (28; 7.5%). Again, hardly anyone (4; 1.1%) uses voice recognition for forms.

Lastly, the composition of reports (Table 7) seems to differ from the composition of e-mails, memos, and letters, and is more similar to the composition of forms. Many (62.1%) professionals "always" key reports themselves with no assistance, but other methods are at least represented by the claim that professionals "sometimes" use them, such as keying a draft for assistant to complete (102; 27.4%).

What comments do professionals have regarding written communication methods of creation?

Besides some very unique comments due to specific business settings of the professionals, general trends in open-ended question responses seem to center around the good quality and availability of technology, but interestingly the non-use of voice recognition software. Also, some professionals lament the time it now takes in the workplace to encode messages due to the high volume.

Table 5
Letters Created by Method and Frequency

	Frequency of Use				
Method	**Always**	**Sometimes**	**Never**	**Not Responding**	**Totals**
Key and complete myself with no assistance	249 (67.0%)	102 (27.4%)	18 (4.8%)	3 (0.8%)	372 (100.0%)
Key a draft for assistant to edit and complete	19 (5.1%)	103 (27.7%)	215 (57.8%)	35 (9.4%)	372 (100.0%)
Dictate to voice recognition and complete myself	1 (0.3%)	6 (1.6%)	334 (89.8%)	31 (8.3%)	372 (100.0%)
Dictate to voice recognition and assistant completes	0 (0.0%)	3 (0.8%)	337 (90.6%)	32 (8.6%)	372 (100.0%)
Dictate directly to assistant or dictation unit	1 (0.3%)	34 (9.1%)	306 (82.3%)	31 (8.3%)	372 (100.0%)
Handwrite for assistant to edit and complete	5 (1.3%)	85 (22.9%)	253 (68.0%)	29 (7.8%)	372 (100.0%)

Table 6
Forms Created by Method and Frequency

	Frequency of Use				
Method	**Always**	**Sometimes**	**Never**	**Not Responding**	**Totals**
Key and complete myself with no assistance	197 (53.0%)	145 (39.0%)	21 (5.6%)	9 (2.4%)	372 (100.0%)
Key a draft for assistant to edit and complete	18 (4.9%)	102 (27.4%)	217 (58.3%)	35 (9.4%)	372 (100.0%)
Dictate to voice recognition and complete myself	1 (0.3%)	4 (1.1%)	335 (90.0%)	32 (8.6%)	372 (100.0%)
Dictate to voice recognition and assistant completes	0 (0.0%)	4 (1.1%)	337 (90.6%)	31 (8.3%)	372 (100.0%)
Dictate directly to assistant or dictation unit	1 (0.3%)	28 (7.5%)	312 (83.9%)	31 (8.3%)	372 (100.0%)
Handwrite for assistant to edit and complete	5 (1.3%)	88 (23.7%)	251 (67.5%)	28 (7.5%)	372 (100.0%)

Table 7
Reports Created by Method and Frequency

Method	Frequency of Use				
	Always	Sometimes	Never	Not Responding	Totals
Key and complete myself with no assistance	231 (62.1%)	122 (32.8%)	15 (4.0%)	4 (1.1%)	372 (100.0%)
Key a draft for assistant to edit and complete	17 (4.6%)	102 (27.4%)	218 (58.6%)	35 (9.4%)	372 (100.0%)
Dictate to voice recognition and complete myself	1 (0.3%)	4 (1.1%)	336 (90.3%)	31 (8.3%)	372 (100.0%)
Dictate to voice recognition and assistant completes	0 (0.0%)	6 (1.6%)	335 (90.1%)	31 (8.3%)	372 (100.0%)
Dictate directly to assistant or dictation unit	1 (0.3%)	23 (6.2%)	316 (84.9%)	32 (8.6%)	372 (100.0%)
Handwrite for assistant to edit and complete	3 (0.8%)	84 (22.6%)	255 (68.5%)	30 (8.1%)	372 (100.0%)

CONCLUSIONS AND DISCUSSION

Findings from the research questions suggest that professionals create documents very differently than they did in 1992, when Wiggs collected data on the frequency of methods used to create various types of messages. The need for business teacher educators is there to ultimately instill in future professionals how to create messages without much administrative assistance, as most still communicate through their desktop or laptop PC. Virtually all who had administrative help used it at some point, but much less in e-mails and forms than in memos, letters, and reports. Also, the fact that 39% had no help whatsoever is key to consider in training business students and those going to be teaching business.

Also, there are still some old fashioned ways being used, as many professionals still prefer to often write messages in long-hand for administrative assistants to complete (on all types except e-mail). It is also important to note that despite a large amount of information in literature today on the benefits of new creation technology, such as voice recognition, virtually no professionals claim to even "sometimes" use such technology. In fact, open-ended comments subsequently provided reveal unawareness or frustration and abandonment in using such technology. Thus, voice recognition perhaps continues to be an avenue that business educators need to pursue.

Again, businesspersons overwhelmingly choose to always key and complete e-mail messages themselves, with no assistance; however, the few professionals (10%) who have access to full-time administrative assistants do seem to utilize that help some to edit and complete e-mail messages. This finding supports the literature (cited in Martin, 2004) in that e-mail still is considered private or it may reflect a desire to have greater administrative help that would influence creation methods. This supports the notion that business educators need to continue e-mail etiquette training at the secondary level in particular.

Overall, the number of professionals who always create messages with no assistance decreases with increasing message formality, with the exception of reports. However, professionals may fatigue in typing and prefer to use another method, especially when they have an administrative assistant to edit and complete the message. Also, the trend is that if professionals "sometimes" handwrite a draft for assistant to complete for memos, they also "sometimes" use that method about as frequently for letters and forms.

In sum, most professionals who graduated from mid-major MBA programs write the many types of messages on a daily basis from start to finish with no assistance. However, the nonexistent use of voice recognition, the current subject of much concentration in business education and business communication literature at the present time, and scarce use of dictation to machine or assistant, may reflect the lack of resources and/or unwillingness to delegate message creation duties.

The three methods which respondents overwhelmingly indicated they "never" (less than 4%) use to create any message at all were "dictate to voice recognition and complete myself," "dictate to voice recognition and assistant completes," and "dictate directly to assistant or dictation unit." This again may be a result of limited administrative assistance.

RECOMMENDATIONS FOR PRACTICE

Recommendations for practice should be taken as steps to consider for curricula while subsequent recommendations for further research may be explored:

1. Due to the surprising lack of administrative assistance available, even for those with advanced degrees, it is gravely important that professionals continue to be taught business message and document formatting and writing skills. It is apparent that many even with MBAs do not have as much administrative assistance available as perhaps postulated.
2. Business educators must continue to embrace new features such as Twitter and text messaging more for business in addition to personal communication. As known, social media outlets such as Facebook hold potential opportunities for business. Also, Blackberrys and voice recognition may serve to improve productivity in business writing and other tasks through reducing opportunity cost.
3. Business teacher educators who prepare teachers for the secondary level should not abandon training on input methods in the light of keying and texting on QWERTY devices, large and small, and especially voice recognition.
4. Also, business teacher educators should stress the introduction of voice recognition, as most professionals in the last three years still didn't know about voice recognition, even late in the first decade of the 2000s, as evidenced by Table 1 and many respondent comments.

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What Does the Management Major Need to Know?

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ABSTRACT

Representing over one-fifth of the undergraduate degrees conferred, the Bachelor of Business Administration is the most sought-after degree in American academia. Management majors comprise nearly half of those graduates. Darwinian logic suggests that Business Schools and Management curricula must be doing a wonderful job to have earned such popular support. But what does the data say? Do potential employers agree with this deduction? After reviewing recruiter and employer demands and comparative Business School offerings, the paper concludes that students receive a satisfactory technical education (hard skills). Found wanting, however, is students' mastery of social and conceptual competencies (soft skills). An additional finding implies that programs of study may also need to address some character issues (personal skills).

INTRODUCTION

Over the past 40 years, the United States population has grown 149 percent (U.S. News, 2010); while undergraduate enrollment is up 152.5 percent. As enrollment has surged, the number of degree-granting post-secondary schools increased their numbers over two-fold. The bulk of this growth, about 65 percent, occurred in the past two decades (Snyder & Dillow, 2010). Overall, a greater percentage of the population is going to college, or going back to college, than ever before. The Pew Research Center attributes this to the faltering economy (Fry, 2009).

So which degree receives the greatest interest? The baccalaureate degree in business represents 21.5 percent of all undergraduate degrees conferred in 2008; this is twice the number of the runner-up, Social Science and History. In 1970, the relative positions were just the opposite. The reversal began during the recession of the 1980s and the gap has widened ever since (Snyder & Dillow, 2010); lending credence to the Pew Research conclusions. Management students earn nearly 49 percent of all business degrees conferred (Snyder & Dillow, 2010). Employer education assistance benefits conform to this pattern. Seventy percent of tuition reimbursements go to business education (SHRM, 2009).

Expectations

It would seem reasonable that those paying for education would have similar expectations regarding the purpose for which it is pursued. Although there is a paucity of data regarding student expectations, employers are quite clear. According to the Society of Human Resource Management's (SHRM) 2009 poll, offering a competitive benefits package that facilitates employee retention is the number one reason given for why employers are willing to pay for tuition. The other reasons in sequence of importance are: personal development, acquisition of advanced skills (specialization), acquisition of basic skills, and retraining or retooling. Although the no-

tion of promoting the "well rounded person" has an appealing ring, the Bureau of Labor Statistics (2008) states that 78 percent of educational benefits directed toward business courses are "work related." In a 2007 survey of graduating seniors, 72 percent of respondents intended to seek employment and 21 percent to continue their education in graduate school (NACE, 2007). Reflective of the employer data, 93 percent of the college graduates also consider education as work and career related.

These data beg the question, "do students and employers desire the degree as an added-value differentiator for employment consideration and a predictor of career success, or are they seeking the education it is supposed to represent?" In 1970, when 10 percent of the adult population held a college degree, the argument likely favored the former and assumed the latter. In 2003, with 27.7 percent of the adult population holding a bachelors degree (US Census, 2003), employers, if not students, would be expected to be more concerned with the educational content and take-away than the certification.

Both employers and students appear see programs of study as "work related." Within these programs of study, the business curriculum occupies center stage for both constituencies. Moreover, the courses associated with Management represent the most heavily subscribed in the business school. The question now becomes, "do these Management courses teach the skills that employers are seeking?"

Definitions

Any discussion of skills inventories must recognize that there is a difference between "understanding" and "knowing," and between "knowledge" and "skill." In the discussion that follows, the terms conform to the definitions provided here. Understanding means that which one perceives makes sense; it is unambiguous. Knowing is a mental process (cognition) by which perceptions are stored, related to other memories, can be recalled, and can be applied and extrapolated. It is the basis for reasoning (conation). If acquired knowledge can be applied to do, undo, mend, create, execute or accomplish it is becomes skill. Skills are, generally, manifestations of knowledge and are sometimes limited or facilitated by the physical ability to execute what is known.

In his seminal work, Keith Davis (1957) opined that effective business practices require a skill set that is comprised of technical, conceptual, and interpersonal abilities. Technical skills are principally task-related (know how) and tend to diminish in importance with career advancement. Conceptual skills relate more to organizational, reasoning and analytic abilities that tend to become progressively more important with career advancement. Acquired technical skills are critical for those entering the work force. They are the basis for hiring decisions and the "meat" of entry-level jobs. Conceptual skills take on greater importance when evaluating promotion potential and represent a greater proportion of management work demands. Reliance on interpersonal skills (social effectiveness) appears to change little over a career. More recently, a fourth category, identified as personal skills, has been explored (Hansen & Hansen, 2009). Personal skills reflect such character dimensions as values, initiative, flexibility, and similar qualities. Of the above skill sets, conceptual, interpersonal, and personal skills have been found to be the most transferable across industries and employers.

Another skill classification schema is hard (task-related skills) and soft (context related skills). Hard skills tend toward the technical and administrative, and soft skills toward the personal, social, and conceptual. Finally, basic skills are foundational (writing, basic mathematics, reading comprehension), whereas advanced skills build upon basic skills and facilitate specific application (technical writing, spreadsheet analysis, programming, etc.).

Purpose of Research

This study seeks to determine what skills are demanded of a student graduating with a degree in management. It was designed to answer two questions:

1. What are the specific skills that a salient Management education should impart?
2. Are current curriculum designs providing the critical skills identified in the first question?

Initially, this study was to meet the needs of a specific southern College of Business at a public university. The Management Department Chair created a Task Force to review the current curriculum, determine its adequacy, and suggest changes if indicated.

RESEARCH DESIGN

The method consists of both secondary and primary data collection and analysis. The task force reviewed the current literature to identify the skill sets perceived as most important to recruiters and employers. Next, they compared business school curricula to determine how course offerings of selected institutions align with the identified skill sets. This portion of the study examined the prevalence of tracks and concentrations, required and elective courses offered in the management major, and for self-evaluation purposes, the prominence of courses relating to communications and project management. Finally, the results of the first two parts of the study set up structure discussions with a focus group to determine if the findings reflected the sentiments of the hiring constituency of the school. This latter portion of the study had a twofold purpose: 1) it responded to the Association for the Advancement of Collegiate Schools of Business International (AACSB) appeal for greater cooperation among business schools and their business constituencies to identify critical skills and strengthen curricula (AACSB, 2006), and 2) inclusion of this feedback provided a validity test for the earlier conclusions.

The Business School Sample

The AACSB is the most prestigious accreditation body for colleges and schools of business. Consequently, AACSB accreditation was the principal criterion for selecting schools. This portion of the study conformed to the methodology employed by Wardrope et al (2009) in their study of International Business Curricula.

The ultimate selection classified schools into three categories based on 1) reputation, 2) peer status, and 3) aspirant status. About.com's (2009) "Top Business School" list, confirmed by Businessweek's "Top Undergraduate Business Programs" rankings (BW, 2009) provided the reputation category. AASCB defines peer institutions as schools that have a similar vision and mission as a school seeking accreditation and aspirant institutions as schools that have management education programs or features that the applicant school hopes to emulate and that place the vision and strategy of the applicant school in context. As the college involved is AACSB accredited, the institutions were a sample of those already identified as peers and aspirants in the college's accreditation process. The sample population in this study consisted of the "Top Ten," fourteen peer institutions, and four aspirant institutions (see Appendix A).

The Focus Group

Three members of the college's advisory board volunteered to participate in the focus group phase of the study. Each holds a responsible executive position in his respective organization and each participates in company personnel hiring and promotion decisions or has done so in the past. Joining the researchers in the focus group discussions were the college's Undergraduate Associate Dean and the Chair of the Department of Management and Entrepreneurship. Discussion topics came from the literature and curriculum review portions of the study.

Scope and Limitations

The results of this study should not be considered to be conclusive nor universal. Participants in the focus group, although experienced and qualified, were selected as a matter of convenience and have been involved in the college's affairs. In addition, all participants represented mid-sized firms operating in the services sector. Consequently, one cannot assume their pure objectivity. Finally, the study was designed to address the specific needs of a specific institution. These provisos notwithstanding, the study results do hold implications that may be of value for other institutions concerned with the same or similar issues.

LITERATURE REVIEW OF RECRUITERS AND EMPLOYERS

What are the Important Skills?

In a cooperative study between the Southern California business community and the business school, Pepperdine University compiled a list of the most important management skills (perhaps talents) for the 21st century (Mallinger, 1998). With responses equally distributed between faculty and business leaders, fourteen attributes emerged from a content analysis of the data collected. Listed in no particular sequence, they were:

1. The ability to manage differences, diversity, and multicultural sensitivity,
2. The ability to manage change,
3. Being strategically minded and visionary,
4. The ability to motivate,
5. Decisiveness,
6. Possessing a global perspective,
7. Ethics, honesty and integrity,
8. Computer literacy and business software competency,
9. Possessing analytic, research and problem solving skills,
10. Resiliency—able to balance job, family and outside demands,
11. Ability to facilitate and manage teams,
12. Effective communications and interpersonal skills,
13. Having a self-development mindset—willingness to learn,
14. Having the ability to recognize current trends and market conditions.

Participants then worked in groups to identify and prioritize the "top five" attributes. Because of a tie, the list was expanded to six skills/attributes that were:

1. Communication and interpersonal skills,
2. An ethical or spiritual orientation,
3. The ability to manage change,
4. The ability to motivate,
5. Analytic and problem solving skills,
6. Being a strategic/visionary manager.

It must be acknowledged here that Pepperdine is a private institution with a religious affiliation and the study is 12 years old. These conditions notwithstanding, the findings, in the main, are similar to more current and secular samples.

Hansen and Hansen (2009), for example, found that the skills most sought by employers are: flexibility, adaptability, and managing multiple priorities; the ability to relate to and inspire coworkers; planning and organizing; and problem solving, reasoning, and creativity. They also noted that employers are seeking several personal-value-related characteristics beyond those cited above, which include: adaptability and flexibility; dedication, hard work, and tenacious; dependability, reliability, and responsibility; positive motivation, energy, and passion; professionalism; confidence; initiating; and loyalty.

Employers taking part in the National Association of Colleges and Employers Job Outlook 2010 survey (NACE, 2010) ranked the top five qualities they seek in potential employees as: communication skills, analytical skills, team skills, technical skills, and a strong work ethic. "These are the skills that employers believe are important to on-the-job success," said Marilyn Mackes, NACE executive director, "Not surprisingly, our research shows that employers are looking for well-rounded candidates. In a tight job market, the candidate who can offer that bit more has the advantage." U.S. News & World Report survey data support these findings. The five most important skills for "selling oneself to a recruiter" include: negotiation, leadership, and interpersonal skills; business process identification, analysis, and design; project management; six sigma and lean management; and supply chain management (U.S. News, 2009).

The Dailyblogtips (Scocco, 2008) asked the question in an online survey, "what is more important to succeed online, business or technical skills?" Business skills scored a resounding 70 percent. Some respondents went beyond the dichotomy and opined some additional qualities, including: experience, common sense, passion, self-reliance, initiative, resilience, commitment, and character. Several respondents noted that attitude and aptitude were far more important than acumen. There was a general sentiment that one could teach specific technical skills (explicit knowledge), but factors related more to the person than his or her educational preparation would determine "teachability". Plice and Renig (2008) reported similar results from a survey of their school's alumni advisory board members.

Phani (2007) expanded the desired soft skill list to 60 items and suggested their absence might more than offset an abundance of hard skills when employment candidates are evaluated. Referencing the Workforce Profile cited in the article, he noted, "Soft skills are as important, if not more important, than traditional hard skills to an employer looking to hire – regardless of industry or job type." The 60 skills he lists in the profile tend to reflect or paraphrase those cited earlier, but there are a few notable additions: sticking with a task until it is done; ability to listen and document; good personal appearance; punctuality; being drug free; willingness to follow rules and directions; safe work habits; and courtesy. He also noted some basic skills on his list: math, grammar, writing skills, advanced mathematics, ability to measure, knowledge of fractions, ability to use rulers and calculators, basic spelling, reading and comprehension, ability to fill out a form or job application, knowledge of basic production and business methods, and general knowledge of the world and what makes it operate as it does.

The college's management department undertook a similar study to this in 1997. They asked faculty, alumni, students, and the business community, "What does a management major need to know?" The responses were not too dissimilar to those reported above. They were competencies relating to:

1. Field and major,
2. Leadership, communication, ethics, and vision,
3. Technology and computers,
4. Interpersonal and team effectiveness,
5. Creative thinking,
6. Logical thinking,
7. Communication,
8. Mathematics.

Although much of the "buzz" among recruiters and employers focuses on the importance of the soft skills, in the past two Price-Waterhouse-Coopers (PWC) surveys, CEOs around the world list the most important skills as principally hard. They acknowledge that leadership, creativity and innovation, and risk management skills are bonuses, but more essential are technical, administrative, change management, and international expertise (PW 2007, 2008). In part, their conclusions derive from what they see as the changing landscape of the global business setting. They identified the big challenges facing contemporary management as: merger, acquisition, and joint venture trends; business confidence; government actions; global risks; and climate change. These forces, in turn, put pressure on; managements' abilities to achieve short-term survival and long-term success, accommodate change, improve collaboration and information exchange, reduce costs, and mitigate risks. Success, they argue, will require redefinition of success measures and strategies with greater imagination.

How Are the Business Schools Doing?

Texas Christian University's Neeley School of Business conducted a focus group with 10 Dallas-Fort Worth business executives to discuss "what college graduates are lacking upon entering the workforce?" They concluded that interviewing, critical thinking, and teamwork were areas where college graduates need the most improvement (Burrhus-Clay, 2009).

York College of Pennsylvania polled more than 500 recruiters and employers nationwide to determine the importance of professionalism when

considering a job applicant. More than 30 percent of respondents agreed that professionalism among college graduates applying for entry-level positions has declined over the past five years. One third said less than half of college graduates exhibit professionalism in the workplace. The majority felt that recent college graduates have a hard time accepting personal responsibility, acting independently, and do not have a sense of direction or purpose.

Long-tenured human resource manager Kelly Gorman opined, "Overall, colleges do a good job of offering students the technical skills they will need in the workplace, but they don't always succeed at teaching students the importance of professional behavior" (Bair, 2009). Michael Gabriel, CIO of Home Box Office adds, "There's a big difference between what colleges teach and what . . . employers need. The problem is that universities do not train people to take jobs. If they were better prepared to hit the ground running, they would be a more effective and lower-cost resource that could compete with offshore talent. They wouldn't hit potential constraints imposed by the time and effort required to get them to be productive" (King, 2009).

Where the 2010 NACE Job Outlook Survey, cited above, provided a wish list of job applicant qualities, a similar study conducted two years earlier (NACE, 2008) addressed areas where candidates were found wanting. Fully one-third of respondents cited failings in communication skills, with most specifically noting that new graduates lack formal writing skills. Others reported weak face-to-face skills and a preference for e-mail. They also cited poor interviewing, presentation, phone, and overall interpersonal skills. The next largest group cited weaknesses associated with conduct in the workplace. They complained that new graduates lack a good work ethic, analytical and problem-solving skills, business acumen, initiative, specific computer skills, flexibility, and professionalism. Also they gave low marks to graduates on independence, patience, and the willingness to work long hours to get the job done. Some faulted recent graduates for their lack of practical work experience and specifically cited the lack of internship or any other type of hands-on experience.

Comparing the two surveys, it appears that the skills found lacking in 2008 were the same skills that were deemed most valuable in 2010. Although CIO, Cindy Warkentin, gives university curricula high marks, she does so with reservations. "From a technical standpoint, the book learning and the experiences that technology students have are fairly sound. I don't see any huge gaps," she said, "But the university doesn't teach them what it's like to be in the workaday world." Other shortcomings she identified included: an inadequate grip on business realities, a narrow worldview, lack of career focus, and wobbly relational skills. When required to engage in face-to-face communication, new graduates often experience difficulty in reading interpersonal signals, formulating ideas, and getting their point across. Warkentin specifically stated (King, 2009), "Most of the gaps I see are on the social, soft skills side."

Summary Conclusions from the Literature Review

There is considerable consistency among recruiters and employers with respect to the skills, abilities, and attributes they look for in incumbents. Further, they appear to value these qualities equally over time and across industries. They predict the acquisition of hard skills, deemed important in the past, to be even more critical in the future. Finally, the majority of recruiter and employer feedback suggests that business schools are providing students with an adequate technical education.

They find wanting, however, a mastery of those skills related to conceptual and interpersonal proficiency. Although daunting, it is not beyond the capacity of the academy to mount an effective response to these challenges. In fact, the literature provides direction, albeit subtle: more integration, more practice, more teaming, and more practicums. The paucity of personal skills cited is another issue entirely. Character building, not within the traditional purview of higher education, represents both a threat and an opportunity. If business school graduates are not prepared to take on the demands of the world of work, irrespective of the cause, can the institution really claim a job well done? If, on the other hand, remediating these shortcomings becomes a

school's cause célèbre, competitive advantage will likely accrue to success.

BUSINESS SCHOOL CURRICULA REVIEW

Home Department Curriculum

The undergraduate curriculum of the department that undertook this study provided the foundation for the review portion of this study. The initial focus of interest was to determine how it compared to Top Ten (TT), peer, and aspirant (P&A) schools, in required and elective course offerings. Second, but, perhaps more important, was how the institutions' curricula aligned with employer demands. The college's Management department curriculum is in Table 1 below.

Management majors may pursue a General Management degree or a concentration in International Management, Entrepreneurship & Innovation, Human Resources Management, or Operations Management. Further, the college offers an International Business Degree, within which is the option of a Management concentration. Sports Management is outside the Business School.

Most Popular Specializations

The first pass reviewed the sample institutions to identify the most popular tracks, specializations, or concentrations offered (see Table 2).

Table 1
Management's Department's Courses

Management Courses in the Business Core	
Management & Behavioral Science	
Operations Management	
Strategic Management	
Management's Major Field Requirements	
Venture Management	Human Resource Management
Organizational Behavior	International Management
Elective Management Courses (any 4)	
Leading and Teaming	Compensation and Reward Systems
Business, Ethics and Society	Human Resource Selection
International Business	Int'l. Human Resource Management
Entrepreneurship & Creativity	Contemp. Global Business Practices
Venture Analysis	Hospitality Management
Family Business Management	Int'l. Supply Chain Management
Franchise Management	Managing Process Improvement
International Entrepreneurship	Quality Management
Commercial Real Estate Ventures	Service Operations Management
Organizational Communications	Directed Study
Employee & Labor Relations	Special Topics in Management

Table 2
Most Popular Tracks or Concentrations Offered

Most Mentioned	
Track	**% of Total**
General Management	55.5
Human Resources	35.5
Entrepreneurship & Innovation	29.6
Operations & Supply Chain	25.9
International Business	22.2
Management Information Systems	18.5
Also Mentioned	
Consulting and Change Management	
Strategic Management	
Organizational Effectiveness Operations	
Supply Chain Organizational Management	
Sports Management	
Risk Management	
Sustainability	

Approximately 60 percent of the TT schools do not provide for specialization within the Management degree, compared to 11.1 percent of the P&A schools. Although the General Management specialization was the most common, it is highly likely the table understates its popularity. For those schools that do not provide for specialization, General Management is the only option; for other schools that stipulate specializations, but do not name General Management as an option then it is likely the default specialization.

Seventy-five percent of the TT schools that offer specializations offer International or Multinational Management as a choice; only one peer and two aspirants do likewise. On the other hand, none of the TT schools offer a Human Resource Management (HRM) specialization, yet 61.1 percent of the P&A schools do. Fifty percent of the TT schools offer an Entrepreneurship specialization and 33.3 percent of the P&A schools. About one-third of the P&A schools offer Operations Management as a specialization, whereas none of the TT schools do. Global, Entrepreneurial, and Change Management specializations among the TT schools seem to have displaced HRM and Operations Management, long the mainstay of the traditional management curriculum, yet they still hold prominence among the P&A schools. Gaining popularity across all schools is the Entrepreneurship specialization.

Requisites

The second comparison examined courses required of all Management majors within the respective programs of study (see Table 3).

Table 3.
Most Popular Management Major Required Courses

Course	TT%	P&A%	% of Total
Organizational Behavior	60.0	55.6	57.1
Business Communications	70.0	44.4	53.6
International Management	40.0	44.4	42.9
Human Resource Management	20.0	50.0	39.3
Information/ Management Tech.	30.0	38.9	35.7
Operations	20.0	33.3	28.6
Legal/Ethical Environment	20.0	27.8	25.0
Analytical Applications	20.0	11.1	14.3
Strategic Management	20.0	11.1	14.3
Entrepreneurship/ Venture Mgt.	20.0	5.6	10.7

Here there was much greater consistency between the TT and P&A schools. The majority of schools require some form of Organization Behavior and Communications course. There was a split between International Management (IM) and HRM as the next most popular requisite. Twice as many TT programs required IM as did HRM. In the P&A schools, representation was more balanced with HRM slightly favored. The TT schools that required HRM also required IM; 38.8 percent of the P&A schools required both. Information Technology was relatively evenly balanced amongst both TT and P&A schools. A greater percentage of P&A schools required Operations Management and Legal or Ethical courses than did TT schools. One TT school required both courses, as did five P&A schools. Analytic and Strategic courses had the reserve pattern. The greatest disparity between the groups was in the Entrepreneurship area; among the TT schools it was as prominent as 50 percent of the other required courses; among the P&A schools it was clearly the minority requisite. Overall, 50 percent of the TTs and the P&A schools had four or more required courses in their curricula. Of those with fewer than four required courses, the majority required a Communications course.

While noteworthy, the data above cannot be taken too literally because of variations in curriculum design. Some business schools have core curricula that all students are required to take irrespective of their majors. For example, only four schools in the sample had Strategic Management as a major requirement yet it unlikely that a Management graduate would not have such a course. This anomaly devolves upon the fact that Strategy is likely part of the core and is thus omitted as a required major course. The same conditions may also apply to a variety of other "mainstay" courses such as communications. Since there was no attempt here to examine core requirements, this issue lies beyond the scope of this study but does represent a worthy research topic for follow-on study.

In spite of the proviso above, both the TT and P&A schools appear to follow the same pattern in their required courses as in their specialization offerings. The TT requisites lean toward the more systems, conceptual and soft skill areas, whereas the P&A schools show evidence of a more traditional hard skill bias.

Electives

The third part of the review compared elective offerings. The principal options are in Table 4. Once again, it must be noted that some of the elective courses reflect required courses in some programs and may duplicate core courses in others. The same admonishment to avoid over-generalization applies here.

Table 4
Most Popular Management Major Elective Courses

Course	TT%	P&A%	% of Total
Project Management	30.0	17.0	22.0
Groups/Leading/ Teaming	40.0	11.0	21.8
Entrepreneurship/ Venture Mgt.	40.0	11.0	21.8
Process Improvement	20.0	11.0	14.7
Supply Chain Management	30.0	6.0	14.5
Negotiation	30.0	6.0	14.5
Consulting	40.0	00.0	14.3
Operations Research	20.0	6.0	10.9
Quality Management	20.0	6.0	10.9
Sustainability.	20.0	6.0	10.9
International/ Multinational Mgt.	20.0	6.0	10.9
Ethics	10.0	6.0	7.3

There is a clear pattern between and among TT and P&A schools with respect to their elective offerings. TT schools seem to offer more electives than P&A schools. What does seem prevalent, however, is that where a popular course is not a requisite, it is offered as an elective. Where almost 60 percent of the sample requires an OB course, for example, 22.2 percent cover similar ground with a Groups/Leading/Teaming elective; where 11.1 percent require Entrepreneur-

ship, twice the number provides it as an option; 44 percent of the schools have an IM requisite, and 11 percent an IM elective. The most popular TT electives are also among the most popular P&A electives, the only exception being consulting.

Beyond the obvious reasons, many elective offerings derive from faculty interest and expertise and others from "fleshing out" disciplinary menus. The observation that five of the twelve courses listed above might complement an Operations/Supply Chain specialization, the fourth most popular Management concentration, supports this notion. Finally, business schools are businesses themselves, thus marketability is likely to affect elective offerings. Some may result from riding fashionable trends (e.g. sustainability), and others from responding to local market demand (e.g. consulting).

Summary Conclusions from the Curriculum Review

With 100 years of experience, one would expect that business schools have learned what a manager needs to know. Consequently, one would expect a high degree of agreement among programs with respect to the courses they require of their majors. More-or-less, the data suggest that Management curricula are behaving as might be predicted. All business majors receive some form of introductory management course early in their program of study and most have an integrative capstone course at the end. Between these courses, Management majors typically take courses in Organization Behavior (micro organization dynamics) and Communications. Beyond that, there appears to be a toss-up between an emphasis on HRM or IM. There seems to be little agreement with respect to a fourth course requisite and beyond.

When one views specializations, requisites and electives together, some compelling patterns emerge. Some schools appear to prepare students for a production environment and others for service; some for a "big business" career and others for life in the small or medium sized enterprise; some provide more hard skills and others more soft skills. When it comes to concentrations and electives alone, there is no discernable pattern. This too is predictable as both are functions of faculty composition and interest, market trends, institutional objectives and mission, tradition, and a host of other factors.

The presence or absence of one or another required course across the majority of curricula should not be accorded excessive significance. Complete agreement would suggest that "there is only one way to skin a cat" and experience suggests otherwise. On the one hand variation might appropriately reflect the distinctive competency of a specific institution and on the other it might represent an attempt to capitalize on an identified market niche. In both instances, curriculum design would have strategic significance that would permit the institution to differentiate itself in the crowded marketplace. Noteworthy here is that few schools attempt to be all things to all constituencies in their offerings.

What is most compelling about the data are the prevalence of Organization Behavior and Communication courses as requisites, and Groups/Leading/Teaming and Project Management as electives. These courses typically address the skill sets that employing constituencies report to be least evident among recent graduates.

FOCUS GROUP FINDINGS

The focus group was convened to include a primary data source in the investigation. This portion of the study consisted of two parts. The first was an interaction between the researchers and panel members in which they explored open-ended probe questions regarding critical skill demands and desires. To expedite the process, a one-page briefing that included selected highlights from the secondary research was sent to the participants a week before the group met. In the second part of the study, the panelists responded to three structured questions:

1. Assuming that the business core curriculum stays the same, what skills and abilities does the management curriculum need to offer? Please feel free to add as many as you perceive are truly needed.
2. What are the topics that should be included in our management required courses?
3. Is there a need to sequence certain topics? If so, please recommend such sequencing.

The sequence embodied in this design was based on the notion that the panel members might provide additional data if they had an opportunity to reflect on the discussion stage.

Phase I—The Focus Group Discussions

Paraphrasing the underlying theme of the discussion phase, the focus group said, "we want people who understand, who can express what they understand, and who will respectfully and conscientiously take the action indicated by that understanding with integrity." The comments reflected Davis' (1967) skills categories, but in a different order. The panelists suggested they were seeking students who are conceptually adept, socially sensitive and able, and technically aware. Whereas the business school traditionally pursues an objective of technical mastery for its students, the group felt that a sound technical foundation was sufficient. Attempting to reconcile the two positions stimulates some intriguing questions. Could it be that while management faculty members are preparing the managers of tomorrow, employers are asking, "manage what?" Might they be saying that one needs to know about something before one can manage it? Consequently, an awareness of sound management principles and practices will facilitate development as one learns the functions and nuances of the particular organization in which a management career is sought. Once one develops mastery of the business function, the management skills can be engaged. Perhaps this is why HR, operations, real estate, travel and hospitality, and sports management curricula metamorphose into career tracks more readily than does general management. Preparatory course-work in these areas actually identifies the variables managed.

Consolidating the discussion phase into a set of teachable skills led to the identification of four disciplinary areas worthy or consideration. Two areas relate to the issue of understanding: 1) systems thinking, and 2) research and analysis. The panelists wanted people who would accord deference to complexities by getting the facts, appreciating the relationships, and proceeding where reality dictates.

Much of the discussion also related to competencies that traditionally fall within the purview of Administration. Once the core of the BBA degree, it seems the "A" may have been displaced by disciplinary "silos." The issues arising were control, conservation, compensation, communication, conflict management and negotiation, consistency and continuity (project management, goal setting and feedback, assessment), and coordination and cooperation (leading and teaming, conducting effective meetings, using liaisons)—the "7Cs".

The final area of concern related to issues that one might best categorize as business protocol. Topics ranged from personal appearance to interpersonal skills to character traits. At the core of these discussions was the notion that students need to know how to operate effectively within the business society.

Phase II—The Written Reflections

Topics

Contextual awareness and appropriate response was a dominant theme for the majority of panel member comments. This was a two-dimensional issue. The initial, and most discussed, concern related to social context.

Paraphrasing the expressed sentiments, "the world of work is an interpersonal affair that demands understanding others, being sensitive to them, and creating effective and authentic relationships." So how does this boil-down to a skill set? The critical competencies identified were:

1. Appearance, comportment, and behavior in business settings.
2. Communication. Comments addressed writing skills (both electronic and traditional; letters, memos, e-mail, FAX, proposals, and "texting"), verbal expression (formal and informal), presenta-

tion skills, public speaking, negotiating, interviewing, and the proper use of "social media,"

3. Leading and teaming. Much of this feedback delved into what might best be classified as personal skills, such as following instructions, taking initiative, cooperating, accountability, and follow-through. The group appeared more concerned with incumbents' follower skills than their leadership skills. Although much is made of leadership, the responses suggest that new or retooled employees will likely have to prove themselves as productive team members before they are given any leadership responsibility.

The second issue addressed in this area related to business context. Respondents felt it extremely important that both overall systems and specific situations be understood and accommodated in a rational and appropriate manner. They identified critical thinking as the principal valued outcome, but unlike the communication topic, they did not specify the details of specific competencies. From the general comments, however, one might infer several skills. Understanding the "big picture" and how the parts fit-together, was a common theme. Thus, research, modeling (systems theory), analytic methodology, strategy, and strategic planning appear most related to the macro skill set desired. At the micro level, specific mention was made of project management, creative thinking, problem solving (logical-deductive reasoning), and administration. Overall, the panelists wanted people with a fundamental understanding of general business functions and practices and a manifest ability to integrate them into work demands and challenges.

The focus group also covered some of the more technical issues found in the PWC survey. The respondents shared sentiments regarding skills that specifically relate to operating in harmony with a more-regulated business environment: HIPAA (Health Insurance Portability and Accountability Act) and the Sarbanes-Oxley Act received specific mention. They also wanted to see candidates with a basic understanding of business finance and responsibly managed personal finances.

It would not have been surprising if the panel members' perceptions paralleled those of the PWC executive survey referenced earlier. That is, the executives would be most concerned with technical competency. Some variation was also predictable because of the size and scope of the enterprises represented in the two queries. Although there was some overlap in responses, the PWC survey data implied a concern with more global, growth-related skills; the focus group appeared more concerned with more operational, sustainability-related competencies. The CEO group identified technical mastery as critical; the focus group preferred a solid technical foundation upon which they could build and identified conceptual and interpersonal skills as more critical. The PWC executives surveyed seemed most interested in the manager of tomorrow whereas the focus group executives were more concerned about the management job seeker of today.

Course Sequencing

With respect to course sequencing, the focus group generally deferred to the faculty but deemed some areas to be "foundational" and that appropriate course work should be placed early on in the program. All agreed that students should take courses that enhance the full range of communication early and that further course should reinforce these topics regularly throughout the course of study. In addition, they see courses that would facilitate effective group leadership and membership to be essential building blocks. They further suggested that negotiation and critical thinking would best be deferred until the students had become "seasoned." They saw Project Management skills as best developed if integrated into several other courses currently in the curriculum.

Summary Conclusions from the Focus Group

There was little significant difference between the focus group results and those from the literature review. They perceive that the business school was doing a satisfactory job in preparing students with the necessary hard skill sets, but found the soft skills to be wanting. A bit surprising was what the focus group wanted in terms of hard skill preparation, a fundamental understanding versus mastery.

With respect to the topics the focus group would like to see the college address, the point needs to be made that there are differences among and between course titles, course content, and pedagogy. For example, many of the soft skill deficiencies mentioned are typically covered in Organization Behavior courses (group dynamics, leadership, authority and motivation, communication). This course is in the majority of curricula as a major requisite. So why are students found to be bereft of the, ostensibly covered, skill sets? Could it be that the course content does not align with the course title? Simultaneously, both the literature review and the focus group asked for folks who could see and understand the "Big Picture" yet macro courses and content are notably absent from the curricula reviewed. Are these issues sufficiently covered throughout curricula thus making dedicated courses unnecessary?

Also worthy of consideration here is the integration of skill sets and their reinforcement throughout the program of study. An alternative explanation of why certain skills are found lacking is that students are provided the fundamentals in one course but follow-on courses neglect to incorporate and polish those skills in their execution. If this is the case, would dedicating more resources to more courses really make a difference?

Another surprising focus group perception related to the absence of skills that Business Administration courses used to cover (the "7Cs.") Stand-alone courses (e.g. conflict resolution and negotiation, compensation, communication, etc.) cover some of this content currently, which this raises another question. Might it be that students can best understand task facilitation, the essence of administration, if one presents it as a system of ideas versus groups of specialized activities?

The final and most challenging piece of focus group feedback paralleled what the literature described as personal skills. The challenge is how an academic institution can impart and implant business culture norms, values, and roles. The paradox is reflected in the current practice of offering Ethics courses. If schools have to teach ethics to adults, is success even possible? The subject and its elements can be broached, but will behavioral change ensue? Twenty-five percent of the school sample requires a Law or Ethics course and another seven percent offer it as an elective, yet the news is replete with stories of legal and ethical misconduct on the part of Business School graduates. Similarly, if one simply discusses character issues in the classroom (as opposed in actual activities like Outward Bound), will this necessarily translate to character building?

CONCLUSIONS AND DISCUSSION

Data suggests that there is a considerable difference among perceptions of important employment-related skills among three critical constituencies, students, educators and employers and recruiters. The closest agreement appears to be educators with employers and recruiters (Bovinet, 2007). Conspicuously absent from this study are the perceptions of the career services advisors who are also party to the career preparation and selection mix.

Any conclusions deriving from studies of desired skill-sets must, necessarily, take into account that personal preferences and perceptions of students will likely mitigate discipline and course selection decisions. That is, simply because teaching faculty and employers agree that certain skills are critical or desired, students may ignore these skills when selecting majors and preparing for careers. First, courses that appear trendy, consistent with preferences, or even romantic, may receive "heavy" enrollment interest, even though they may be "light" with respect to imparting critical skills. Second, students' acquired competencies may influence their decision processes. For example, a student with weak quantitative skills may pursue a Liberal Arts degree in communications, versus business; feeling that both will lead to the same employment opportunities. Third, courses with high amount of critical skill content may seem too daunting for some (especially numerical skills). Exacerbating this latter notion is the student folklore about "easy" and "hard" classes and faculty, and that earning a degree is all that matters. Suffice it to say that in spite of sincere curriculum design efforts to

provide salient, practical and marketable courses, the ultimate impact of such initiatives will be determined not only by how well the college aligns course content aligns with employer demand, but also by how well students prepare for course demands and how thoroughly they have sound educational values instilled in them. An emphasis on content to the exclusion of considering the system that delivers it may lead to consequences contrary to those desired. The numerous "degree mill" institutions in the marketplace support the notion that critical skill acquisition may not be the primary criterion for students' decisions.

The most glaring example of this phenomenon is the TAP education for innovation initiative (TAP, 2008). In 2005, "15 of America's most prominent business organizations joined together to express their deep concern about the ability of the United States to sustain its scientific and technological leadership . . . ." Recognizing a near-future shortfall of U.S. science, technology, engineering, and mathematics (STEM) graduates with bachelor's degrees, TAP undertook initiatives to double the number of such graduates by 2015. In spite of the demand for STEM graduates and TAP's efforts, the number of graduates obtaining STEM degrees has remained relatively flat. 2009 projections suggest a deficit of 95,000 from estimated demand. The employment opportunities are there, the skills known, but enrollment has not been forthcoming.

A noteworthy implication that educational experience may take precedence to educational content in terms of facilitating student success relative to employment. That is, if work habits and personal comportment are accorded the same emphasis as perceived employment related skills, might a more prepared graduate derive benefit? If students are not impressed with the importance of deadlines, knowledge retention, protocol, accuracy, sound writing mechanics, and research and analytic skills, will their exposure to different disciplinary content really make a difference in their employability?

The dearth of hard skill deficiencies, with the exception of general comments, noted among the sources reviewed suggests that 1) the business school is currently doing a good job preparing students with the necessary hard skill sets, or 2) the paucity of graduates' soft skills are causing employers more grief than is their lack of hard skills. It may be that potential employers are suggesting that they can teach incumbents company processes and practices, but they do not have the time, resources, or inclination to teach them how to write an intelligible sentence, project a professional image, or to think "outside the box."

Implicit in the preceding is that business schools, across the board, are attempting to provide demanded skill sets in their curriculum designs and are responding to shifts in demand in their respective markets. Although the courses, in the main, appear to align well with the majority of valued skills, little can be said of specific course content, delivery modalities, class dynamics, inter-course integration and reinforcement, or assurance of learning. The face validity is there, but employer feedback suggests the content validity is suspect, particularly with respect to the conceptual and interpersonal skills, the soft skills. The marginal skills reported might evidence that either the content is missing, is there but the importance of understanding has eclipsed knowing, or knowledge is imparted but reasoning is not challenged. Certainly, the student cannot be left out of the equation. Just as students are the determinants of enrollment patterns, they are the gatekeepers of skill acquisition. Hence the old saw, "when the student is ready, the teacher arrives." Elevating student readiness may be the priority challenge.

Perhaps the most promising approach to assessing demanded and forecast hard skill needs is to revisit the CEO perceptions on the shifting world of work and the external demands placed on business systems. A consistent theme here is the need for a systems perspective versus traditional disciplinary approaches. The future suggests a greater demand for maestros than virtuosos. Those who can see the big picture and facilitate making complex systems work would seem to have a competitive edge. So how might that translate to course content?

1. An emphasis on research, analysis, and report writing.
2. Basic planning, organizing, implementation and control skills.
3. Understanding the role and methods of administration.
4. Organization analysis and change (macro).
5. Program and project management methods.
6. Managing across national borders.
7. Security and risk management.
8. Sustainability management.
9. Management in a regulated environment (regulatory relations).
10. Organization effectiveness assessment, evaluation, and remediation.

Concurrently, it would be naïve to assume that students will advance to management positions, about which the CEOs are concerned, without having acquired the necessary organizational survival skills and achieved a degree of social maturity. Beyond the indicated course work (Organization Behavior, Communication, and Administration) the business schools' graduates might be better served if greater emphasis was also placed on student conduct (professionalism, cooperation, initiative, follow-through, timeliness, etc.) Faculty role modeling and high standards for student conduct also have promise for facilitating the acquisition of the soft skills the business world demands. Much like the STEM conundrum, colleges know the management skills required, and can offer the courses needed, but the desired outcomes remain elusive.

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Appendix A

"Top Ten" Schools
Cornell University
Emory University
Mass. Institute of Technology
New York University
UC Berkeley
University of Michigan
UNC Chapel Hill
University of Pennsylvania
University of Texas- Austin
University of Virginia
Peer Institutions
Brock University
Cal. State-Long Beach
Cal. State-Northridge
Grand Valley State
James Madison
Northern Illinois
Sam Houston
So. Illinois-Edwardsville
UNC-Wilmington
U. of North Florida
U. of So. Florida - St. Petersburg
U. of Southern Maine
University of Toledo
U. of Wisconsin – Whitewater
Aspirant Institutions
Cleveland State
UNC-Charlotte
U. of Texas – El Paso
U. of Texas – San Antonio

The Unintended Consequences of Developmental Courses

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ABSTRACT

Students are placed into developmental courses to remediate academic weaknesses identified by placement tests. The focus of these courses is subject area content. The current approach to remediation may be too focused on individual behavior while ignoring the social processes that may be occurring in these courses. The results of this pilot study suggest that students placed in these courses may be developing group cohesion and accepting lowered performance norms and developing unproductive classroom behavior. The processes of cohesion, deviance and managing stigma may come together in an unanticipated way and create less than desirable social behaviors.

INTRODUCTION

A large number of high school graduates lack the basic academic skills needed to be successful in College. Twigg (2007) reviews a TBR study that examines the need for remediation among high school graduates in Tennessee. Of those enrolled at two year colleges, 74% were required to enroll in developmental courses. Over 40% of students at four year colleges required remediation. The developmental courses are designed to improve students' performance in reading, math, and writing. If students require remediation in multiple areas, they may also be required to enroll in a learning strategies course designed to improve students' study habits and time management.

Twigg (2007) describes the challenges students face when required to enroll in a large number of developmental courses:

> The developmental course structure can present a significant obstacle to students' ability to realize their educational goals. Many students who begin a developmental course withdraw due to work, family or health issues. Students who withdraw and return the following semester must begin the same course from the beginning, even though they may have demonstrated mastery of some portion of the material prior to their withdrawal. Weaker students may be required to complete up to three full semesters of coursework prior to advancing into regular college-level courses. Many students are delayed in applying for admission to specific academic and professional programs. Others give up and drop out completely. Typical drop-failure-withdrawal rates in these courses of 40% to 50% further compound the problem (Twig, 2).

In addition to the challenges referred to by Twigg, these courses create the potential for students to develop social and behavioral problems. In these courses, students are grouped together with other students who struggle academically. Their initial social network will be made up of students who lack the basic academic skills to complete college course work. This may create an environment that leads participants to view low skills levels as the norm. Based on research on group behavior, if the groups become cohesive, they may coalesce around low performance norms. Are we unintentionally creating a group of students that because of group cohesion reinforce the norms of low performance and develop dysfunctional ways to succeed in the academic environment?

SOCIAL FORCES AT WORK IN THE CLASSROOM

Classrooms are social places. This obvious fact is often overlooked when designing student learning straggles. The focus on individual achievement leads to processes that are under socialized, that is they ignore or downplay the importance of social processes in learning. The key social processes under study in this paper are group cohesion, stigma and self fulfilling prophecy.

Festinger (1950) defined cohesion as social forces that make group members want to remain in the group. This definition has been refined by many scholars due to the difficulty in operationalizing the original concept. Most current applications of the concept differentiate between task and social cohesion (Dion and Evans 1992). Cohesion in work organizations is seen as a predictor of organizational citizenship behavior.

Group cohesion is generally viewed as a positive process that increases group performance (Chiocchio and Essiembre, 2009). Research is primarily focused in ways cohesion can be developed in order to strengthen the groups' effectiveness. The assumption of this body of work is that the groups have positive goals and want to increase their output. There is little research concerning groups that have coalesced around low performance norms.

Goffman (1963) examined individuals who are viewed by the larger society as having a stigma or some type of undesirable characteristics. People possessing a stigma may try to conceal it to protect their sense of self but in the case of students placed in the learning strategies developmental courses, their stigma is "visible" to all members of the class, the instructor and the students' advisors. Members of stigmatized groups may develop an "us versus them" mentality and see deviance as justified to overcome their unfair stigma. Members of these groups may develop their own subcultures or countercultures. Expressions such as "C's get degrees" and "2.0 and go" are common phrases used by students when asked about their academic performance. If a student spent several semesters with other students that had developed and shared various coping mechanisms, this might reinforce their view that deviance is acceptable because the system is unfair.

Merton (1968) is credited with coining the phrase "self-fulfilling prophecy". He suggested that people who are labeled as deviant by the larger society will internalize this label and act accordingly. There are numerous studies in the field of education that show that teacher expectation of students affect student performance. In this case, students have been grouped together because of "deviant" test performance. Both the identification of stigma and the grouping together may lead to a self-filling prophecy; these students are told they are weak students and need to learn special strategies for being successful in college.

METHODS

This is a pilot study designed to develop a grounded theory model for future research of these processes. The primary goal of this study was to determining if students who had been enrolled in large numbers of developmental courses displayed performance problems in the classroom. Student performance in a junior level management class was used to examine the behavior of students who had taken large numbers of developmental courses as opposed to those who had not. All developmental courses should be completed by the time students enroll in this course.

Students were not aware of this process and the information was gathered as a normal part of classroom activities. IRB approval was granted. The variables examined were attendance, bringing a textbook to class, talking and disruptive behavior, and cheating during exams. The instructor did not know how many, if any, developmental courses students had taken. This was done to prevent the instructor's perceptions of students being altered by this information. There was a chance that none of the students had taken development courses or that they all had taken the same number of courses.

RESULTS

There were 40 students in the course. After the last day of class the instructor totaled the number of developmental classes on each student's transcript. Each development course that was shown on the transcript was treated as a course attempted. The range was zero to nine courses. The mean

Table 1
Frequency of Attempted Developmental Courses

Number of Developmental Courses Attempted	Frequency	%	Cumulative Percent
0	10	25.0	25.0
1	4	10.0	35.0
2	4	10.0	45.0
3	2	5.0	50.0
4	5	12.5	62.5
5	4	10.0	72.5
6	2	5.0	77.5
7	6	15.0	92.5
8	2	5.0	97.5
9	1	2.5	100.0
Total	40	100.0	

number of developmental courses attempted was 3.425, the median was 3.5. Table 1 presents the frequencies count for the courses attempted.

Based on a frequencies count of the number of developmental course taken, students were divided into three groups. Group one contained 10 students who had taken no developmental courses. The remaining 30 students were divided into two groups, those who had attempted 1 to 3 developmental courses and those who had attempted 4 or more courses. For each variable, the expected observation was compared to the actual observation.

Attendance was eliminated as a variable as it did not contain enough variation. Attendance was taken in each class period (twice a week for fifteen weeks) and only three students had more than three absences. Bringing a book to class was measured mid semester. This allowed students to have received their finance aid and make their textbook purchases. The textbook used had 18 chapters and textbook possession was observed during the week that chapter eight was covered. Students were not told that textbook possession was being recorded to avoid affecting their behavior.

This result was somewhat surprising. The students who had no developmental courses attempted had the lowest rate of book possession during class.

The next variable examined was talking and disruptive behavior in the classroom. Examples of disruptive behavior were having a conversation on their cell phone during the lecture and loud talking. Quiet occasional whispering was not counted as talking. In one case, a student went next door and started playing a piano, poorly, in the next room.

Table 2
Students Bring a Textbook to Class at Midsemester

Number of Developmental Courses Attempted	Had Text	Book			Total
		No Text	Not Present During this Week	1	
0	Count	1	8	1	10
	Expected Count	4.5	5.3	.3	10.0
1-3	Count	9	6	0	15
	Expected Count	6.8	7.9	.4	15.0
4-9	Count	8	7	0	15
	Expected Count	6.8	7.9	.4	15.0
Total	Count	18	21	1	40
	Expected Count	18.0	21.0	1.0	40.0

Of the students who had taken no developmental courses, none of them engaged in disruptive behavior. One third of the other two groups of students engaged in disruptive behavior.

The next variable examined was cheating behaviors during exams. Cheating behaviors included extended glances at other exams, digging in pockets and under tables for "something" and then stopping the behavior when the instructor stood or sat next to them, having large open bags at their feet that contained notes and class information, and talking to other students during exams. Table 4 presents the results of this variable. Note that nearly half of the students who had taken more than four developmental courses engaged in cheating behaviors.

DISCUSSION

Number of development courses attempted appears to be a poor predictor of largely individual behaviors such as attendance and bringing a textbook to class. These courses, on the other hand, appear to be a good predictor of certain social behaviors in the classroom. The emphasis on classroom performance is typically on the actions of each student as an individual and ignores social group behaviors. This study suggests that the social affect of development courses should

Table 3
Disruptive Classroom Behavior

Number of Developmental Courses Attempted	None	Behavior		Total
		One or more	1	
Ø	Count	10	Ø	10
	Expected Count	7.5	2.5	10.0
1-3	Count	10	5	15
	Expected Count	11.3	3.8	15.0
4-9	Count	10	5	15
	Expected Count	11.3	3.8	15.0
Total	Count	30	10	40
	Expected Count	30.0	10.0	40.0

Table 4
Cheating Behaviors during Exams

Number of Developmental Courses Attempted	None	Cheating Behaviors		Total
		Any	1	
Ø	Count	10	Ø	10
	Expected Count	7.5	2.5	10.0
1-3	Count	12	3	15
	Expected Count	11.3	3.8	15.0
4-6	Count	8	7	15
	Expected Count	11.3	3.8	15.0
Total	Count	30	10	40
	Expected Count	30.0	10.0	40.0

be considered. Students are placed in the courses together and by being in the classroom together, they know that all members of the class share the stigma of low test performance. Students placed in the study skills developmental course know that they have several developmental courses and scored poorly in more than one area of their standardized tests.

An examination of the syllabi of the writing and math developmental courses found a strong emphasis on attendance. The writing syllabus examined stated that students would be removed for the course for excessive absences and had to obtain the instructors permission before they could continue to attend the course. This emphasis on attendance may be one factor in the high attendance rates of students enrolled in developmental courses.

One question this study raises is the origins of the disruptive and cheating behaviors among the students who had attempted remedial courses. Did they have these behaviors before they entered into the college classroom? Did the social factors in the college classroom increase or create these behaviors? Perhaps, without the remedial course, the levels of disruptive behavior and cheating would have been even higher. It is important to note that this study is not looking for causation, only correlation. If future studies find that these results can be generalized to the larger population, the focus of the issue shifts from identifying the causes of the behavior to viewing remedial courses as an opportunity to address these behaviors. Instructional methods can be developed in these courses to address the undesirable behavior as well as developing testing strategies reduce the viability of cheating as a successful strategy.

Is cheating wrong? If cheating allowed a student to complete his or her high school courses and continues to show efficacy in the college classroom, why not use this approach? From a behavioral point of view, cheating may lead to the strengthening of the student's view of themselves as less competent or stigmatized. It may lower the trust level in the classroom and reinforce the "us versus them" mentality. This may decrease the students' drive to seek assistance with course material.

Disruptive behaviors and cheating may be coping mechanisms used when students find material too difficult to master. They essentially withdraw from the learning environment. This strategy presents a potential problem for students entering the workplace. If students use these approaches in professional and work related training, the consequences may be much greater than failing a course. Students who have not developed the skills needed to approach instructors and seek help may not be able to approach mangers and colleagues in the workplace to seek assistance.

FUTURE STUDY

One limitation of this study is the small number of participants. As this work is developed, larger groups of students will be added. Another issue is related to persistence; do the shared values and norms of these students persist through their academic career or do they being to fade as students move to higher level courses?

All remedial courses were equally weighted in the study. A study conducted by the National Center for Educational Statistics found that being placed in remedial reading courses was associated with lower college success rates.

> The need for remedial reading appears to be the most serious barrier to degree completion: it is associated with more total remedial coursework and with lower rates of degree attainment than other remedial course-taking patterns. Students who took any postsecondary remedial reading were less likely than their peers who took one or two remedial mathematics courses only or just one remedial course (not mathematics or reading) to complete a bachelor's degree or higher (17 vs. 27 and 39 percent, respectively). They were also less likely than their peers who took any other combination of remedial courses to have earned a formal award (30 vs. 41 to 57 percent) within 8 years of high school graduation. Enrollment in remedial reading is also associated with higher rates of total remediation. Fifty-one percent of students who took any remedial reading enrolled in four or more remedi-

al courses, compared with 31 percent of students who took any remedial mathematics (NCES, 2004).

A problem common to all research that examines deviant behavior is the observation and collection of information. Are convicted criminals different than those that have not been caught? In the case of students, do the non developmental students have cheating strategies that are not being detected? Are the other students in effect "better" cheaters?

Students who take significant amounts of developmental courses are older than other traditional students. In public schools, older students who have failed to advance are separated from the traditional aged students often because of concerns about their behavior and influence on younger students. An area for future research is the impact on the performance of the younger students who have not taken the developmental courses. Does having a group of students who have shared norms of disruptive and academically dishonest behavior affect students outside the group? It is important to note that of the students who attempted significant amounts of developmental course, only a third were disruptive while two thirds demonstrated appropriate classroom behavior.

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Perceived Classroom Management Problems of Teacher Candidates

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ABSTRACT

This paper will discuss a study that explored how teacher candidates at two universities perceived specific classroom management problems prior to becoming classroom teachers. Teacher candidates were asked to respond to student classroom management behaviors by rating the amount of discomfort each behavior generated for them based upon their time in field experiences. Data analysis suggested eight statistically significant differences and sixteen similarities between the responses of the teacher candidates' perceptions.

INTRODUCTION

The 2006 Gallup Poll, reporting in Phi Delta Kappan (2008) listed "lack of discipline" near the top of a list of major problems in public education. These findings came as no surprise to educational personnel who supervise beginning teachers and teacher candidates. Despite the emphasis placed on classroom management in most teacher preparation programs, discipline, or the lack thereof, is often a concern of beginning teachers and the educational personnel who supervise them (Lewis, Romi, Qui & Katz, 2005).

The most serious problems that beginning teachers report concern classroom management (Veenman, 1984; Brock & Grade, 1996; Adler, 1996; Thomas & Kiley, 1994). McNally, I'anson, Whewell, and Wilson (2005) found that the preparation teacher candidates received during their education programs was inadequate for the "real world of teaching." Melnick and Meister (2008) surveyed 273 first year and second year teachers and found a disconnection between the pre-service content of teacher preparation programs and the problems that new teachers encounter in their first year of teaching.

With classroom management concerns such a prominent concern for new teachers, it may be beneficial for teacher education programs to help their teacher candidates explore preconceived beliefs about themselves and teaching and provide opportunities for the students to alter those beliefs, when necessary, to be more in line with the reality of teaching. Understanding the classroom management behaviors that current teacher candidates consider the most intolerable, therefore, would be helpful for teacher educators.

This article describes a research project that attempted to do just that--understand the major classroom management concerns of teacher candidates. We chose The Classroom Discipline Survey (Wright, O Hair, & Alley, 1988), which determines 24 most common classroom management problems in teaching to survey teacher candidates at two universities in the southeast. How would those teacher candidates perceive classroom management problems prior to their first year of teaching and could the similarities or differences in perception inform teacher educators and classroom management curricula?

METHODS

The purpose of this study was to determine which classroom management problems teacher candidates at two different teacher education institutions perceived to be most stressful based upon their field experiences. Wright, O'Hair, &

Alley, (1988) attempted to understand the classroom management problems with which teacher candidates were most concerned using a survey that listed 24 classroom management problems. The same survey instrument, The Classroom Discipline Survey, with a five-point Likert scale was used in this study to measure participants' attitudes at two different teacher education institutions. The survey instrument measured teacher candidate perceptions of 24 items related to classroom management. Teacher candidates measured the degree of uneasiness that 24 classroom management behaviors caused them as they reflected upon the field experiences of their teacher education programs.

Data Collection and Analysis

At the Florida teacher education institution, the general methods with classroom management course was taken during the students' first semester in the College of Education at the junior level. At the Tennessee teacher education institution, teacher candidates took the classroom management course in the semester prior to student teaching in their senior year; classroom management stands alone as a course. At both institutions the courses included a required K-8 field experience where the teacher candidates participated in the classroom experience beyond simply observing the K-8 teacher. Candidates were able to form opinions about classroom management behaviors based upon their field experience.

Data were collected at both institutions at the same point during the semester, after the teacher candidates had been in their K-8 field experience classrooms for at least four weeks. In both institutions, field experiences were completed in grades K-8. Students at the Florida University provided 78 surveys and Tennessee teacher candidates provided 43 responses. Informed consent was obtained from participants and Institutional Review Board (IRB) protocol was observed.

The research question was: how do pre-service teacher candidates at two universities perceive problem classroom management behaviors? Frequency of responses for each of the items was compared across the two universities. Exact tests of independence (Everitt, 1992) for measuring significant exact probabilities were performed. For the data numbers, the exact test was more accurate than the chi-squared test. Exact tests compared the responses of participants at both teacher education institutions, producing a p-value. The .05 level of significance was used. SPSS in Microsoft 2007 was the statistical software used to analyze the data.

PARTICIPANT DEMOGRAPHICS

In both teacher education institutions, the majority of respondents were female—92% of those from Florida (n= 65) and 94% of those from Tennessee (n= 33). Table 1 presents the distribution of respondents' ages. Tennessee students were older than those responding in Florida. Of the Florida students, 38% were under the age of 21 and 87% of respondents were 28 or younger. However, 81% of Tennessee students were between the ages of 21-36. Only 2% of students in Tennessee were under age 21.

Table 1
Age of Students Responding by Institution.

Age	Florida (n= 77)	Tennessee (n= 43)
Under 21	34%	2%
21-28	53%	65%
29-36	5%	16%
37-44	5%	9%
45-54	3%	7%

Table 2 presents the enrollment of the school in which students were participating in their field experiences. Distribution was fairly similar for students in both Florida and Tennessee with the majority of students (58% at both universities) at schools with 300-699 students. In Florida, 38% of students were in schools with 700-1199 students, while 33% of students in Tennessee were in schools this large.

Table 3 presents the locations of the field experience schools. Very few of the students in Florida (2%) were in rural schools, while 30% of students in Tennessee were located in rural settings. In Florida, 74% of students were in suburban schools, compared to 50% of students in Tennessee. The distribution of students in urban settings was fairly consistent with 22% of students in Florida indicating they were in urban schools, compared to 20% of students in Tennessee.

Table 2
Sizes of Field Experience Schools by Institution.

Number of Students	Florida (n= 71)	Tennessee (n= 40)
100-299	1%	8%
300-699	58%	58%
700-1199	38%	33%
1200+	3%	3%

Table 3
Location of field experience schools by institution.

	Florida (n= 75)	Tennessee (n= 43)
Urban	22%	20%
Suburban	74%	50%
Rural	4%	30%

RESULTS

There were statistically significant differences in some of the responses. Significant exact test probabilities indicated that the result of several items were not independent of the university. Differences in responses between the teacher education institutions occurred with eight classroom management problems: tardiness, hyperactivity, extortion, touching others, non-participation, daily attendance, cheating, and vandalism. Significant exact tests indicated that the result of these items were not independent of the university. These items are presented below and discussed.

Table 4 illustrates that a higher percentage of teacher candidates in Florida indicated they expected to encounter very little tardiness in the classroom—64% of Florida students expected very little tardiness compared with only 23% of students in Tennessee. In fact, only 11% of Florida students felt they would encounter considerable or very great tardiness while 35% of those in Tennessee indicated that much of a concern over tardiness.

Table 4
Pre-service Teachers' Expectation of Tardiness as a Classroom Issue.

	Florida (n= 67)	Tennessee (n= 43)
Very Little	64%	23%
Some	25%	42%
Considerable	5%	23%
Very Great	6%	12%

*Exact probability .00, percentages rounded

Table 5 illustrates the variability in responses for students from Florida and Tennessee in expecting hyperactivity as a classroom management issue. Students in Florida appeared to expect this to be less of a concern than their teacher candidate counterparts in Tennessee. Nearly a quarter (24%) of students in Florida thought this would be very little of a concern, while only 2% of Tennessee students believed as much. Fifty-nine per cent of the Tennessee pre-service teachers were concerned about considerable or very great hyperactivity in their field experience class, while only 45% of Florida students expected such an issue.

Table 6 shows the frequency of responses for students from Florida and Tennessee in expecting extortion as a classroom management issue. Once again, students in Florida appeared to expect this to be less of a concern than their pre-service counterparts in Tennessee. Sixty percent (60%) of students in Florida thought this would

Table 5
Pre-Service Teachers' Expectation of Hyperactivity as a Classroom Issue

	Florida (n= 75)	Tennessee (n= 43)
Very Little	24%	2%
Some	31%	40%
Considerable	31%	40%
Very Great	15%	19%

*Exact probability .02, percentages rounded

be of little concern, while 41% of Tennessee students expected very little extortion. However, 21% of Tennessee pre-service teachers were concerned about extortion being a very great classroom issue in their field experience class, while only 9% of Florida students expressed that strong of a concern.

Table 6
Pre-Service Teachers' Expectation of Extortion as a Classroom Issue

	Florida (n= 67)	Tennessee (n= 42)
Very Little	60%	41%
Some	9%	21%
Considerable	22%	17%
Very Great	9%	21%
*Exact probability .05, percentages rounded		

Table 7 illustrates that the percentage of pre-service teachers expecting touching others as a classroom issue was similar in both Florida (63%) and Tennessee (63%), although those in Florida leaned more toward very little with 40% expressing that sentiment.

Table 8 illustrates the variability in responses for students from Florida and Tennessee in expecting non-participation as a classroom management issue. As with many of the other classroom management issues, students in Florida appeared to expect this to be less of a concern than their pre-service counterparts in Tennessee. Nearly three-quarters (74%) of students in Florida thought this would be very little or some concern, while less than half (42%) of Tennessee students believed such. More than half (58%) of Tennessee pre-service teachers were concerned about considerable or very great hyperactivity in their field experience class, yet only 26% of Florida students expressed that as a strong concern.

Table 7
Pre-Service Teachers' Expectation of Touching Others as a Classroom Issue

	Florida (n= 73)	Tennessee (n= 43)
Very Little	40%	21%
Some	23%	42%
Considerable	26%	16%
Very Great	11%	21%
*Exact probability .0.03, percentages rounded		

Table 8
Pre-Service Teachers' Expectation of Non-Participation as a Classroom Issue

	Florida (n= 73)	Tennessee (n= 43)
Very Little	40%	16%
Some	34%	26%
Considerable	12%	35%
Very Great	14%	23%
*Exact probability .00, percentages rounded.		

Table 9 depicts the frequency of responses for students from Florida and Tennessee in expecting daily attendance as a classroom management issue. Sixty percent of Tennessee pre-service teachers felt this would be a considerable or very great issue. Less than a third (31%) of Florida students were as concerned. In fact, 37% of Florida students thought there would be very little issue with daily attendance.

Table 9
Pre-Service Teachers' Expectation of Daily Attendance as a Classroom Issue

	Florida (n= 68)	Tennessee (n= 40)
Very Little	37%	13%
Some	32%	28%
Considerable	19%	45%
Very Great	12%	15%
*Exact probability .01, percentages rounded		

Table 10 illustrates the expectation students had for cheating as a classroom management issue. Fifty-two percent (52%) of Florida pre-service teachers felt this would be a very little of an issue, but only 21% of Tennessee students were that certain with 41% of them expecting some cheating in the classroom. However, only 31% of Florida students, and 28% of Tennessee students expected cheating to be considerable or very great in their classrooms.

Table 10
Pre-Service Teachers' Expectation of Cheating as a Classroom Issue

	Florida (n= 60)	Tennessee (n= 42)
Very Little	52%	21%
Some	17%	41%
Considerable	13%	14%
Very Great	18%	24%
*Exact probability .01, percentages rounded		

Table 11 shows the frequency of pre-service teachers' expectation that vandalism would be a classroom management issue. Again, Florida students were less concerned with this, with 54% of them reporting they expected very little issue, while only 23% of Tennessee students felt the same, and 43% of them felt there would be some issue with vandalism.

Table 11
Pre-Service Teachers' Expectation of Vandalism as a Classroom Issue

	Florida (n= 56)	Tennessee (n= 40)
Very Little	54%	23%
Some	11%	43%
Considerable	9%	8%
Very Great	23%	27%
*Exact probability .00, percentages rounded		

The teacher candidates at both universities expressed similar views on all other comparisons of the remaining classroom management problems. Non-significant differences in responses of exact probability comparisons between the teacher candidates of the two teacher education institutions occurred with the following classroom management behaviors: talking, grooming, stealing, class clown, snacking, notes, profanity, throwing objects, fads, drugs, pranks, cliques, rebellion and insubordination, noises, fighting, and tattling. Table 12 illustrates those classroom management behaviors that this study found to have statistically significant differences between the two teacher education institutions and those which did not have statistically significant differences.

Table 12
Survey Classroom Management Behaviors

Statistically Significant Behaviors	Not Statistically Significant Behaviors
Tardiness	Talking
Hyperactivity	Grooming
Extortion	Stealing
Touching Others	Class Clown
Non-Participation	Snacking
Daily Attendance	Profanity
Cheating	Throwing Objects
Vandalism	Fads
	Pranks
	Cliques
	Rebellion and Insubordination
	Noises
	Fighting
	Tattling

DISCUSSION

We have examined how classroom management students at two universities rated the amount of discomfort each classroom management behavior generated based upon field experiences in their teacher education programs. Eight of the stressors—tardiness, hyperactivity, extortion, touching others, non-participation, daily attendance, cheating, and vandalism—were found to be different in the perceptions of the two groups of teacher educators. Sixteen of the stressors—talking, grooming, stealing, class clown, snacking, profanity, throwing objects, fads, pranks, cliques, rebellion and insubordination, noises, fighting and tattling—were found to be similar

between the participants of the two universities of the study.

There are several demographic factors that may account for the differences in perception of discomfort between the teacher candidates at the two institutions. The students at the Tennessee university had an overall higher mean in age and few students in the lowest age category. This higher age may suggest there are more non-traditional students at the Tennessee university than the Florida university. Older and more experienced teacher candidates may hold varied perceptions than younger candidates. In addition, the locations of the field experiences differed in several areas. More Florida students participated in field experiences in suburban schools than Tennessee students, who had a higher participation at rural schools than Florida students. Students at the Tennessee teacher education institution were in their senior year and had completed between one to two additional field experiences than the Florida teacher candidates at the time of the study. More field experience time may have varied responses between the two groups.

Of course, differences in response rates between the two universities' teacher candidates may be a result of varying factors in the schools, cooperating teachers or students in the field experience, or university programmatic differences. While we may not be able to determine the exact cause for the differences in perceptions of classroom management between the two groups, the differences do hint that curricular changes in classroom management courses may be helpful for teacher candidates.

RECOMMENDATIONS

Teacher educators serving teacher candidates may need to adjust their own pedagogy to best address the unique classroom management perceptions of their students and to aid students in altering their perceptions of classroom management problems when those perceptions do not fall in line with the realities of teaching. The Classroom Management Survey may best be utilized by administering it to teacher candidates as a needs assessment tool at the beginning of the classroom management course. This approach to teaching classroom management would allow teacher educators to incorporate the most common classroom management behavior stressors into the curriculum, thus becoming more pedagogically responsive to student concerns.

Curriculum might be developed to prepare teacher candidates to deal with each of the specific classroom management stressors prior to the student teaching experience, especially those behaviors which are common among teacher candidates. Gaining an understanding of students' classroom management concerns helps teacher educators to be more responsive to students' particular needs. However, classroom management stressors may be contextual. There may be classroom management concerns that are specific to a school, a district, or a region. This survey may also help to determine which of those classroom management behaviors are unique for the university's teacher candidates and by doing so, assist those teacher candidates to become proficient in dealing with those behaviors prior to actually teaching in the classroom. Additionally, common classroom management stressors that are not consistent with the realities of the classroom may be addressed. This intervention may ensure that teacher candidates enter their capstone experience with greater confidence and more effective solutions for the behaviors that concern them as future educators.

Similarly, staff development personnel in school districts could employ the survey with beginning and experienced teachers. The results of the survey with beginning teachers would serve as a focus for the mentoring process. The results of the survey for experienced teachers may assist in the formulation of professional development plans as well as informing teacher educators of the disparities of perceptions between practicing teachers and teacher candidates. Those disparities may alert teacher educators to bring attention to classroom management behaviors for which their own students are concerned but which are not problematic in schools, and vice versa. Aligning perceived and real classroom management stressors will result in better prepared teacher candidates.

Our concerns with the behaviors listed in the survey concern relevance to the realities of modern classrooms. Twenty-eight years after the survey was first designed, some classroom management

behaviors may not be relevant in the classroom. For example, snacking is listed as a stressor behavior in the survey. School rules limiting snacking in modern classrooms may suggest that this behavior could be dropped as an option. In addition, other behaviors may be relevant today that are not included on the survey, such as bullying, texting (or sex-ting), and gang issues. We encourage users to modify the survey to reflect current classroom management problems and specific, contextual behaviors.

CONCLUSION

Teacher candidates are concerned about classroom management. The findings of this study may inform teacher educators, who are responsible for preparing teacher candidates for initial certification, and school district personnel, who mentor beginning teachers through the challenging first years of teaching. Understanding the perceived classroom management stressors of teacher candidates and new teachers allows mentors to create pedagogically responsive curricula and pertinent staff development. Administering The Classroom Management Survey, as a needs assessment tool, may be a useful starting point for this understanding.

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Persistence in Learning: Expectations and Experiences of African American Students in Predominately White Universities

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ABSTRACT

This study addressed the academic, cultural, and social expectations and experiences of 20 African American juniors and seniors at two predominantly White universities in the Southern Appalachian region of the United States. The participants' described experiences revealed how institutional practices promoted or obstructed their persistence to graduation.

Findings indicated a dissonance between the students' academic, cultural, and social expectations and experiences primarily caused by unanticipated racist experiences in the classrooms, on the campuses, and in the campus communities-at-large. Positive relationships with administrators, faculty members, and staff emerged as the most significant contributors to the students' capability to safely and successfully navigate academic, social, and cultural pathways leading to graduation. Recommendations based on the results of the study are provided for university administrators, faculty, and staff who are committed to improving the college experience and persistence to graduation rates for students of color matriculating at predominantly White universities.

INTRODUCTION

Administrators and faculty members of institutions of higher education who are serious about diversity must consider the present experience of minority students in their institutions in order to enhance their ability to educate these students. Much data exist concerning the reasons all categories of students exit college, but data focusing on the persistence of students, specifically African American students, is relatively scarce. African Americans who choose to attend college today have numerous options to consider. Among these choices are public and private schools, liberal arts or technical colleges, single-sex or coed universities, community colleges, Predominantly White Institutions (PWIs), and Historically Black Colleges or Universities (HBCUs). These contemporary options symbolize a significant departure from the severely limited access to higher education opportunities afforded African Americans during previous periods in American history.

Despite tremendous strides that have substantially changed the higher education landscape for African Americans, present-day choices are not completely devoid of academic, cultural, and social challenges. More specifically, African American students choosing to attend predominantly White institutions are consistently confronted with challenges to succeed in university and community environments primarily structured to meet the needs of the majority popula-

tion. Different policies and practices are needed to educate and to serve these students (Stikes, 1984).

PURPOSE OF STUDY AND RESEARCH QUESTIONS

The purpose of this study was to detail and describe the academic, social, and cultural expectations and experiences of participating African American juniors and seniors at two predominantly White universities in Southern Appalachia. The study was conducted to discover and describe expectations and experiences of the participants as they successfully attempted to navigate academic, social, and cultural pathways that could allow them to persist to graduation.

The research questions were derived from the literature relative to African American students' academic, cultural, and social expectations and experiences at predominantly White institutions. The collective stories of the participants could provide valuable insight through exploration of the following questions:

1. How do African American juniors and seniors describe their academic
2. expectations and experiences?
3. How do African American juniors and seniors describe their cultural
4. expectations and experiences?
5. How do African American juniors and seniors describe their social expectations and experiences?
6. How do African American juniors and seniors describe institutional practices that promote or obstruct their persistence to graduation?

RELATED LITERATURE

The U. S. Supreme Court outlawed segregation in public schools with the landmark ruling in *Brown v. Board of Education* in 1954; subsequently the U. S. Congress passed the *Civil Rights Act* in 1964 and the *Higher Education Act* in 1975. These decisions and legislative acts dramatically changed the landscape for higher education opportunities for Black Americans and set the stage for diversifying college campuses across the country.

Until the 1960s, a defining decade in our nation's history, only a minimal number of Blacks were accepted into predominantly White schools (Burrell, 1980). Prior to that time, Negro or Black colleges were established to meet the educational needs for Blacks to become constructive and contributing members of American society (Clark, 1967). According to Allen (1987), Black students are choosing to matriculate at predominantly White institutions at significantly higher rates than at historically Black colleges.

The preponderance of literature regarding African American students at predominantly White institutions focused on their perceptions, experiences, issues of access, adjustment, and achievement (Allen, 1988; Bradley, 1967; Burrell, 1980; Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 1999; Centra, 1970; Chavous, 2002; Guiffrida & Douthit 2006; Haralson, 1996; Lyons, 1973; Malaney & Shively, 1991; Wallace & Bell, 1999). In short, the research illustrates that Black students on White campuses reported persistent challenges in adjusting to a culturally different, academically demanding, and socially alienating environment. Consequently, these studies showed that Black students on these campuses did not experience high levels of cultural acceptance, academic success, and social engagement.

College experiences make a definite difference in students' persistence-to-graduation. According to Kuh (1999), the published research linking African American students' expectations, learning, and overall satisfaction with the collegiate experience has been limited; however, Allen (1987) pointed out that the racial makeup of a college campus does affect the college experiences of Black students.

The majority of the nation's Black college students continue to enroll in predominantly White institutions (Carter & Wilson, 1996). Researchers have reported that these students are often not prepared for the actual experiences they encounter (Malaney & Shively, 1991). Gloria, Kurplus, Hamilton, and Wilson (1999) reported that at predominantly White institutions, African

American students persisted or were retained at 66.3% of the rate for Historically Black Colleges and Universities (HBCU). This suggests a need for more effective persistence programs at predominantly White institutions.

METHODOLOGY

Introduction

Using the lens of Critical Race Theory (CRT) provided the best framework for this qualitative study to increase understanding about the everyday world perceptions and realities of the African American student participants.

Site Selection

This study was conducted at two predominantly White institutions in Southern Appalachia. The campuses are approximately 50 miles in proximity to one another with similar campus and community demographics. These universities were selected based on several factors including the potential applicability of the research (Eisner & Peshkin, 1990). Administrators on both campuses expressed interest in this study and provided access to key informants and support for developing cooperative rapport with various gatekeepers across the university-at-large. Interviews and observations occurred in public venues that provided a transparent and confidential process.

Sample

The study utilized a purposeful sampling process, and the critical selection criterion for the study yielded 20 Black juniors and seniors "in good standing" with their universities. This specific demographic was chosen because of the students' decisions to remain at their respective universities beyond their freshman and sophomore years.

Data Collection and Analysis

Fundamental to qualitative research is extensive collection of data from multiple sources of information (Creswell, 2007). Data were collected primarily via interviews and observations.

During the data analysis process, detailed descriptions, stories, categorizations, and interpretations of the data collected were included. The analysis process involved organizing the data to develop patterns, make meaning of the data collected, and link together the stories told. The final step in the data analysis process was to merge the patterns from each data collection tool into a cohesive theoretical framework.

FINDINGS

Academic Expectations and Experiences

The themes which emerged when examining academic expectations and experiences were academic expectations and reality, classroom-program demographics, having to prove oneself, faculty-student interactions and relationships, racial stereotypes, and White student behaviors.

Most of the students described themselves as having consistently received As and Bs during their high school years. Several of the students commented that they expected to duplicate those achievements as college students. In some cases, they did better than expected and in others, they did not. Because they were all juniors and seniors, they had learned how to avoid academic failure.

When they are the "only ones" in a majority environment, African Americans have added challenges not experienced by White peers. When this occurs, there seems to be an invisible, but very apparent, laser beam that focuses directly upon "the only." For many African Americans in this situation, experiences are constantly filtered, screened for racism in every moment, and appropriate responses are prepared in advance that will not get you failed or fired. Some students viewed this is an opportunity "to shine" while others described the experience alternately as frightening and shocking.

The additional pressure of their intellectual competence was expressed as "having to work twice as hard to get half as far." Minorities often feel the need to prove they are more than an "affirmative action duty" that is tolerated more than accepted or wanted. Even though the students were successfully persisting towards graduation,

they were still confronting daily challenges that threatened to erode their academic confidence and competence.

The students in the study expressed a range of positive and negative faculty influences, interactions, and relationships. Despite the prevalence of racism and racist incidents in and out of the classroom, most of the students reported that the majority of their instructors were friendly, helpful, and supportive. In response to the request to "describe your general relationship with faculty," 17 of the 20 students had favorable depictions of faculty who shared of themselves with their students and took a personal interest in their academic success.

Many of the factors that contribute to the academic success of Black students are often the same characteristics identified for all college students. However, Black students on predominantly White campuses must cope with the additional burdens of racism, discrimination, and pejorative stereotypes confronting them in the classroom. In addition, these students are often asked to speak as the expert on all things related to the "Black" experience in this country. White students are rarely if ever asked to speak or act for their whole race. The pressure to "represent the race" and counter negative stereotypes are added pressures to Black students whose number one goal is academic success. When these issues arise, the Black student is faced with the choice to be silent, risking the perpetuation of the stereotype or to speak up and risk alienation by their peers or worse, to be perceived as hostile and disrespectful by their faculty. More often than not, students are cautious about confronting professors who have the power to pass or fail them. In either case, the decision takes an emotional toll on Black students that is foreign to their White peers. The energy expended in the rejection of negative stereotypes or the justification for more positive viewpoints causes Black students to sacrifice time learning and forging ahead academically. Many students do not have the time or energy to engage in this type of classroom activism.

Racist tensions on a campus exist because of racist behaviors that, of course, are not exclusive to faculty but also exist between Black and White students. No setting is immune from a racist incident. For minority students at a PWI, such an episode can "pop up" when least expected. One of the more subtle forms of racism that the students discussed was the apparent "surprise" of White students that a Black student might be their intellectual equal.

Cultural Expectations and Experiences

The themes which emerged related to cultural expectations and experiences were the campus culture, racial insults, the "noose incident," segregation on the campus, town and gown aspects, and campus and community police issues.

Responses to the reality of being Black on a predominantly White campus were as varied as the individual student's cultural expectations and experiences. To a person, they admitted that they enrolled at their universities despite concerns, doubts, and fears relative to their adjustment, coping, engagement, and educational outcomes. Despite their best preparations through campus visits, orientations, and institutional assurances of an affirming, welcoming environment for all students, their realities of life on monocultural campuses in the setting of monocultural communities shaded the true campus climate. Even though the students knew they would be attending a predominantly White institution with a significantly low percentage of Black students, several of them expressed their shock and surprise to find more Black students on campus than they expected.

Only one of the students interviewed stated that her campus climate was inviting and enriching, placing the responsibility on the students to make it a positive experience. Another student shared similar feelings about a student's responsibility to make it the best. The remainder of the students gave varying degrees of campus climate descriptions including positive, negative, and outright hostility. When specifically asked if they felt welcomed and embraced by the majority community on their campus and if the experience was what they expected, responses differed greatly, ranging from strongly positive to strongly negative.

Arguably, no other word in the English language sums up the African American racist experience as "nigger," often referred to as the "n" word. That the word remains alive and well in our society and on the campuses of the institutions under study was confirmed by several students.

During the interview process, on one of the campuses under study, a "noose incident" occurred that, understandably, the Black students found highly upsetting. Adding to their frustration was their viewpoint that the response from university administrators was slow and communication was inadequate. At a student forum, the students were told that only a limited amount of information could be shared in order to protect the individuals involved in an ongoing investigation.

The students pointed out that two issues were occurring simultaneously: (a) there is little social intermingling among different racial groups and (b) some of them chose to self-segregate from other racial groups. Black students on predominantly White campuses often self-segregate as a coping mechanism for persistent challenges to their self-worth and racial identity. In spite of several instances where Black students were making the choice to self-segregate, there were other times of formal and informal interactions in social settings among diverse students. Several of the students reported that they were encouraged by faculty and staff to become engaged in multicultural activities.

The students inherited not only a community where discriminatory acts are prone to occur but also a local police force that they alleged demonstrate their bias against Black students. According to the students interviewed, being comfortable in asking for police assistance was often not the case for Black students. On the contrary, their stories indicated, based on their experiences, that students have little confidence and trust that campus security will respond to their needs. This should be an alarming revelation to campus administrators and a call for action to investigate and eliminate behaviors and practices by campus security that were detailed by these students.

Social Expectations and Experiences

The themes which emerged concerning social expectations and experiences were lack of social life, social engagement, spiritual connections, and student organizations.

Black students who choose to attend a rural predominantly White institution find the social experience especially challenging. There are very few outlets in these communities for social activities that appeal to Black collegians. As opposed to most of the students who described a social life that was "non-existent," one student illustrated her social experience as "enriching" because she chose to participate in what her Black friends called "White activities:"

To address students' needs for an active social nightlife, one of the universities has a student-run campus nightclub that provides a weekly variety of entertaining shows, concerts, and events. Some students stated that without this social outlet, the number of African American students, if not students in general, at the university would be significantly reduced.

As successful juniors and seniors on track to graduate, the participants attributed much of their persistence to their involvement with diverse campus organizations including the Student Government Association, Black Student Organization, fraternities and sororities, academic and cultural councils, and honor societies. More than one student stated that being involved is the only thing that kept minority students there.

Among the many challenges the Black students faced was the lack of opportunities to maintain their relationship with a church that provided them with the same experiences as their home fellowships. Several of the students interviewed found a connection to their faith and their culture through their involvement with the university's Gospel Choir and local church activities

Each of the universities under study had a Black Student Organization, accessible to all students, that addressed the concerns and interests particular to the African American students. The Black Student Organization provides opportunities for students of color to interact and participate together in campus-wide activities throughout the school year. Some of the students had joined Black Greek-letter organizations. When asked if there were interactions among the Black and White Greek organizations. The students tended to quickly answer in the negative. Furthermore, according to the students who were members of a fraternity or sorority, racial ten-

sions existed between Black and White Greek-letter organizations.

Institutional Practices

The themes which emerged concerning institutional practices were student support services, student-centered listening leaders, the lack of Black faculty and importance of Black mentors, and recommendations for future Black students.

Emphasizing the need to be proactive, students described the importance of using student resources to help students reach their academic goals. Most of the students credited their success to specific Black staff members in Admissions and Student Services. Based on their remarks, it was obvious that these two offices had made a significant impact in their lives. Several of the students mentioned an admissions recruiter who went above and beyond to recruit and retain them to graduation. When asked what they would say to administrators if given the opportunity to make recommendations to their respective universities for improving the environment for Black students, the number one recommendation from several of the students was to have student-centered administrators who demonstrate a genuine concern for every student. For universities that communicate and advertise their support for diversity, the students are keenly aware that practices need to align with rhetoric.

The students expressed their need to connect with mentors who share their culture and who can empathize with the pressures and challenges that Black students face on predominantly White campuses. More specifically, they reported their desire to meet, get to know, and develop relationships with Black faculty.

RECOMMENDATIONS

The following list of recommendations outlines strategies for improving the institutional environment for African American students on predominantly White campuses as suggested by this research study. There is a need for:

7. developing or strengthening cultural sensitivity training programs for all administrators, faculty, staff, and students designed to create an inclusive and supportive campus climate; these programs must be "sold" in a manner that encourages support and diminishes resistance.
8. committing to the recruitment and retention of Black faculty, staff, and administrators;
9. developing comprehensive orientation and retention programs, with a focus on student success, to help Black students adjust to and engage with predominantly White universities;
10. developing or strengthening peer student and faculty mentoring programs;
11. providing and demonstrating strong support for Black student organizations;
12. providing and demonstrating strong support for Black-oriented social and cultural events;
13. providing a diversity-infused curriculum with African American Studies classes that are consistently taught by African American faculty members;
14. increasing scholarship opportunities to reduce the effect of student loans;
15. developing or strengthening programs with K-12 school systems that prepare all students for academic success in a multicultural collegiate environment; and
16. developing or strengthening partnerships with community leaders including community police that address racial issues and improve the local racial climate.

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Conferences

Prior to this year, Learning and Administration was a primary track of the annual Academic Business World International Conference. Because of increased interest, we have promoted Learning and Administration from a Track to Conference in its own right. For the full call for papers and more information go to http://ICLAHE.org and http://ABWIC.org.